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ACCOUNTS AND PAPERS:

FORTY-FIVE VOLUMES.

—*(24.)*—

RAILWAYS.

(ACCIDENTS ON RAILWAYS.)

Session

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ACCOUNTS AND PAPERS:

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FORTY-FIVE VOLUMES:—CONTENTS OF THE

TWENTY-FOURTH VOLUME.

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GENERAL REPORT

TO THE BOARD OF TRADE

UPON THE

ACCIDENTS

WHICH HAVE OCCURRED ON

THE

RAILWAYS OF THE UNITED KINGDOM

During the Year 1876.

Presented to both Houses of Parliament by Command of Her Majesty.



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1877.

[C.—1866.] *Price 6d.*

REPORT, &c.

To the Secretary, Board of Trade.

Board of Trade (Railway Department),
10th August 1877.

Sir,

I have the honour to present to the Board of Trade a General Report on the accidents which have occurred on the railways of the United Kingdom during the year 1876, founded principally on the returns made by the Railway Companies under the Act 34 & 35 Vict. c. 78. s. 6.

Total killed and injured from all Causes.

The total number of persons returned to the Board of Trade as having been killed on all the railways during the year was 1,245, and the number of injured was 4,724. Of these, 139 persons killed, and 1,883 persons injured, were passengers. Of the remainder, 673 killed, and 2,600 injured, were officers or servants of the Railway Companies or of contractors; and 433 killed, and 241 injured, were trespassers, or suicides, or others who met with accidents at level-crossings or from miscellaneous causes. Of the passengers, according to the returns made to the Board of Trade, 38 were killed, and 1,279 were injured, from causes beyond their own control.

Proportion of Passengers killed and injured from all Causes.

The total number of passenger-journeys, exclusive of journeys by season-ticket holders was 538,287,295,or about 31,000,000 more than in the previous year. Calculating on this estimate, the proportions of passengers killed and injured in 1876, *from all causes*, were in round numbers, 1 in 3,872,570 killed, and 1 in 285,867 injured.

In 1875, the proportions were 1 in 3,783,600 killed, and 1 in 280,800 injured.

Proportion of Servants killed and injured.

The officers and servants of Railway Companies, according to Lord Aberdeen's Return presented to Parliament in the autumn of 1874, amounted at the end of 1873 to 274,535. Assuming them to amount now to 280,000, there have, during the past year, in proportion to the total numbers employed, been killed from all causes about 1 in 416, and killed or injured 1 in 86; but I shall further analyse these figures towards the close of the Report.

Proportion of Passengers killed and injured from Causes beyond their own control.

The proportions of passengers returned as killed and injured *from causes beyond their own control* were in 1876 1 in 14,165,455 killed,* and 1 in 488,908 injured.

In 1875, the proportions were 1 in 29,823,500 killed, and 1 in 418,300 injured.

In 1874, the proportions were 1 in 5,556,284 killed, and 1 in 296,243 injured.

Thus the proportion of passengers killed *from causes beyond their own control* during 1876 shows an increase, when compared with that of the year 1875, but a decrease when compared with that of the year 1874.

The following statement shows the proportions of passengers returned as killed from causes beyond their own control to passenger-journeys for the three years ending 1849, the four years ending 1859, the four years ending 1869, the four years ending 1873, and the years 1874, and 1875, and 1876 respectively :—

	Number of passengers killed from causes beyond their own control.	Number of passenger-journeys.†	Proportion killed (from causes beyond their own control) to number carried.
1847–49 - -	36	173,158,772	1 in 4,782,188
1856–59 - -	64	557,338,326	1 in 8,708,411
1866–69 - -	91	1,177,646,573	1 in 12,941,170
1870–73 - -	142	1,589,912,975	1 in 11,196,570
1874 - -	86	477,840,411	1 in 5,556,284
1875 - -	17	507,000,000	1 in 29,823,500
1876 - -	38	538,287,295	1 in 14,165,455*

* If the journeys of season-ticket-holders are included the proportion would be 1 in 17,000,000.

† Exclusive of journeys by season-ticket-holders, which has been estimated for the past year at 101,000,000.

Accidents inquired into.

Excluding 1 under the miscellaneous class, which refers to the death of a trespasser, 149* train-accidents on railways have formed subjects of inquiry, and have been reported on, by officers of the Board of Trade during the year, against 164 for the previous year, 1875.

The investigated train-accidents in which loss of life occurred to passengers from causes beyond their own control, were six in number. The most serious were those on the Great Northern Railway at Abbotts Ripton, by which 13 passengers were killed; at the Foxcote signal cabin, between Radstock and Wellow, on the Somerset and Dorset Railway, by which 12 passengers were killed; at the Arlesey Siding Station, on the Great Northern Railway, by which 4 passengers were killed; and at Brierfield, near Burnley, on the Lancashire and Yorkshire Railway, by which 3 passengers were killed. In each of 2 other accidents one passenger lost his life.

These accidents are divided as follows for the past year, and the corresponding numbers are, for the purpose of comparison, set opposite to them for the previous six years.

1870.	1871.	1872.	1873.	1874.	1875.	1876.	
9	19	21	24	18	14	23	from engines or vehicles meeting with, or leaving the rails in consequence of obstructions, or from defects in connexion with the permanent way or works.
10	22	17	23	13	13	12	from boiler explosions, failures of axles, wheels, tyres, or from other defects in the rolling stock.
—	2	7	5	—	2	3	from trains entering stations at too great speed.
7	9	22	18	9	10	3	from collisions between engines and trains following one another on the same line of rails, excepting at junctions, stations, or sidings.
18	19	32	20	22	14	19	from collisions at junctions.
54	63	91	98	75	67	49	from collisions within fixed signals at stations or sidings.
3	2	5	3	6	7	2	from collisions between engines or trains meeting in opposite directions.
1	—	—	3	1	1	1	from collisions at level-crossings of two railways.
14	12	34	36	17	25	32	from engines or trains being wrongly run or turned into sidings, or otherwise through facing-points.
6	11	9	11	7	8	5	on inclines.
9	12	8	6	—	3	1	miscellaneous.
Total 131	171	246	247	168	164	150	

Whilst the numbers of investigated accidents were thus, 131 for 1870, 171 for 1871, 246 for 1872, 247 for 1873, 168 for 1874, 164 for 1875, and 150 for 1876, the numbers of passengers killed in those accidents varied during the same years, from 66 for 1870, to 12 for 1871, 21 for 1872, 43 for 1873, 80 for 1874, 19 for 1875, and 35 for 1876; and the numbers of passengers and others, exclusive of servants, injured in them were, respectively, 1,084, 821, 1,183, 1,379, 1,373, and 1,043 and 1,101. But too much stress must not, as Captain Tyler has frequently said, be laid on the results of working in the case of any particular year, as it is only by the light of accumulating experience, over longer periods, that conclusive results can be obtained.

The results of the past three years are, however, more satisfactory, on the whole, than those of the two years immediately preceding them, and in the past year there were fewer investigated accidents than in each of the preceding five years. It is but reasonable to suppose that the improvements so much required, which, in consequence of public attention having been drawn to the subject, are being more or less rapidly introduced, have already borne some fruit. In the face of an increase of traffic, there has been a marked diminution in these three years, as compared with 1872 and 1873, in the numbers of accidents under most of the above classes; the least

* Two of which were subjects of public inquiry.

satisfactory classes in the past year being accidents from engines or vehicles meeting with or leaving the rails in connexion with defects of or obstructions on the permanent-way, and accidents at facing-points.

It will be observed that of the above 149 train-accidents for 1876, (the accident under the head of Miscellaneous being excluded from consideration,) 74, or about one-half, or 50 per cent., were cases of collision under different classes, in addition to certain collisions which occurred on inclines or in connexion with facing-points; whilst 32, or 21 per cent., were from passenger trains being wrongly turned into sidings, or otherwise through facing-points; 23, or 15 per cent., were from engines or vehicles meeting with or leaving the rails in connexion with defects of or obstructions on the permanent way; 12, or 8 per cent., were from boiler-explosions, or failures of axles or tyres, or from other defects of rolling-stock; and 5, or 3 per cent., were on inclines. The Companies on whose lines the above train-accidents occurred in 1876 have contributed thereto in the following proportions for the last five years; and the mileage and gross-receipts, together with the number of passenger-journeys on each system, according to the returns to 31st December 1876, are added, in order that, as far as possible, a means of comparison may be afforded:—

Number of passenger-journeys,* 1876.	Receipts, 1876.	Mileage, 31st Dec. 1876.	Number of Train-Accidents, 1872.	1873.	1874.	1875.	1876.	Railways on which Accidents occurred, 1876.	Passengers killed and injured, 1876. Killed.	Injured.
	£									
1,760,759	206,031	150	—	—	—	1	2	Belfast and Northern Counties	1	8
14,183,126	2,936,587	829	20	26	9	3	8	Caledonian	—	67
1,451,642	209,814	180	1	2	—	—	1	Cambrian	—	—
1,827,953	82,016	6	1	—	—	—	1	City of Glasgow Union	—	6
			—	3	1	—	1	†Glasgow and Paisley Joint	—	—
5,958,022	1,006,509	317	2	4	3	2	3	Glasgow and South-Western	—	1
			—	—	—	—	1	†Glasgow, Barrhead, and Kilmarnock	—	48
37,551,573	2,814,125	859	6	7	6	5	8	Great Eastern	—	25
18,149,267	3,005,897	640	8	6	4	6	6	Great Northern	17	184
			—	—	—	—	2	†Great Northern and Manchester, Sheffield, and Lincolnshire Joint	—	79
3,494,437	620,844	458	—	—	—	—	2	Great Northern (Ireland)	—	8
2,297,182	744,784	485	—	—	—	1	1	Great Southern and Western	—	—
42,280,247	7,032,321	2,059	16	14	10	9	19	Great Western	—	58
			—	—	—	—	1	†Great Western (Launceston and South Devon)	—	3
			1	—	—	—	1	†Great Western and London and South-Western Joint	—	22
1,362,269	363,417	402	2	—	—	2	1	Highland	—	—
36,790,466	3,568,200	439	31	18	20	20	11	Lancashire and Yorkshire	3	104
			1	—	—	—	1	†Lancashire Union	—	—
46,746,332	9,320,977	1,632	35	40	32	25	17	London and North-Western	—	109
			—	5	3	2	3	†London and North-Western and Great Western Joint	1	1
22,430,103	2,616,170	687	3	4	6	4	4	London and South-Western	—	6
28,923,106	1,805,380	349	3	3	1	3	7	London, Brighton, and South Coast	—	51
22,214,706	1,020,290	159	4	3	10	6	1	London, Chatham, and Dover	—	1
2,020,630	103,721	45	—	—	—	1	1	London, Tilbury, and Southend	—	20
11,119,116	1,739,859	260	10	8	7	4	3	Manchester, Sheffield, and Lincolnshire	—	15
3,449,301	112,325	9	—	1	—	—	2	Manchester South Junction and Altrincham		6
50,678,604	555,888	14	—	—	—	2	1	Metropolitan	—	36
			—	—	—	—	1	Metropolitan and St. John's Wood	—	—
27,415,183	284,604	8	—	—	—	2	2	Metropolitan District	1	48
28,716,220	6,245,218	1,238	8	15	9	16	9	Midland	—	48
1,038,095	497,829	415	—	—	—	2	1	Midland Great Western	—	1
270,169	37,598	48	—	—	—	—	1	Mid-Wales	—	—
			—	1	1	1	1	†Monmouthshire	—	6
14,427,452	2,262,891	851	2	11	6	4	4	North British	—	32
29,454,220	6,489,754	1,429	36	26	15	15	11	North-Eastern	—	24

* Exclusive of journeys by season-ticket holders.
† The traffic of these joint lines is included in that of the Companies concerned.

Number of passenger-journeys, 1876.	Receipts, 1876.	Mileage, 31st Dec. 1876.	Number of Train-Accidents, 1872.	1873.	1874.	1875.	1876.	Railways on which Accidents occurred, 1876.	Passengers killed and injured, 1876. Killed.	Injured.
	£									
24,825,911	399,423	12	—	—	—	1	1	North London - - -	—	—
5,092,828	625,303	195	4	2	—	—	1	North Staffordshire - -	—	5
			—	1	—	1	1	†North Union - - -	—	9
930,752	27,561	6	—	—	2	—	2	Oldham, Ashton, and Guide Bridge Junction - -	—	—
			1	—	1	—	1	†Preston and Wyre - -	—	—
			—	—	—	—	1	†Rhymney and Great Western (Bargoed Joint Line) -	—	—
617,830	92,323	92	1	—	1	1	1	Somerset and Dorset - -	12	48
23,632,136	1,916,757	331	4	2	1	5	1	South-Eastern - - -	—	17
Included in Highland.			—	—	1	1	1	Sutherland - - - -	—	11
—	—	—	—	—	—	—	1	Taff Vale and Great Western	—	—

* Exclusive of journeys by season-ticket holders.
† The traffic of these joint lines is included in that of the Companies concerned.

In the above table the accidents for years previous to 1876 are omitted as regards railways on which no inquiry has been made in 1876. The most satisfactory decrease of accidents is, having regard to the more important Companies, on the Lancashire and Yorkshire, and Midland, and London and North-Western Railways, whilst the least satisfactory figures are those opposite to the Great Western Railway. These various accidents, which are necessarily ascribed to the Companies on whose lines they occurred, were, however, in some cases attributable to the carelessness or mistakes of the servants of other Companies working over their lines.

I now proceed to give, as has hitherto been done by Captain Tyler, a brief description of every investigated accident in the year, each in its class, with its causes and conditions, together with a summary for each class, and a general summary in conclusion.

The casualties reported to the Board of Trade but not investigated, mentioned in the summaries at the end of Class A. and Class B., including 104 cases of passenger-trains or parts of them leaving the rails, 204 cases of trains coming into collision with obstructions, 68 of running through gates at level-crossings, and very numerous cases of axle-failure, tyre-failure, wheel-failure, and coupling-failure, would, if given like the others in detail, probably add force to the arguments for the adoption of improved break power.

A.—*Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connexion with the Permanent-Way or Works.*

Caledonian.

3th July.—As the 12.0 mixed-train from Blairgowrie for Coupar-Angus, consisting of an engine and tender, 5 trucks, 10 passenger-carriages, and 2 break-vans, was passing round a curve of 9½ or 10 chains radius adjacent to the down-main-line of the Caledonian Railway near Coupar-Angus, on a rising gradient of 1 in 107·6, at a speed of 12 or 14 miles an hour, the whole of the train left the rails, with the exception of the last three passenger-carriages and break-van. The engine ran about 96 yards beyond the spot where it first left the rails. The engine-driver was running at too high a speed round a sharp curve, on which a check-rail was required.

Great-Eastern.

1st January, 1876.—The 9.10 a.m. passenger-train from Lowestoft for Norwich, consisting of two tank-engines, a break-van, and four passenger-carriages, left the rails, while travelling at a speed of between 20 and 25 miles an hour, round a 30-chain curve, on a falling gradient of 1 in 500. The leading engine fell on its side to the left, the second engine on its side to the right, and three carriages also on their sides. Two platelayers were killed, as well as the fireman of the second engine. Eight passengers and four servants of the Company were injured. This accident was caused by running a train, drawn by two tank-engines, over a road weakened in the course of relaying by want of ballast, at too great a rate of speed for its then condition. Such tank-engines were liable to greater oscillation than other engines, and the road in a weak state, as at the time of the accident, was more liable to disturbance as the result of their oscillations. As the engine-drivers had no warning of the state of the road, no blame could be attached to them. When such repairs to the permanent-way were being carried out, flagmen should be sent out to warn engine-drivers, and the trains should not be allowed to pass over the spot so under repair at greater speed than 5 or 10 miles an hour.

19th July.—As the 1.55 p.m. passenger-train from Chingford for Liverpool Street was running at a speed of 10 or 12 miles an hour round a curve, having a radius of about 15 chains, in the Clapton Tunnel, a third-class carriage, the second carriage behind the tender, left the rails with all its wheels; and it was dragged in that condition for about 180 yards before the train came to a stand. One passenger complained at the time, and two others afterwards made complaints of injury, due to their jumping out of the carriage. An examination of the carriage did not lead to the detection of any defect in its running parts. Either (1) there was some want of level in the rails on the outside of this rather sharp curve; or (2) the short buffers of the train, composed of carriages with long wheel-bases of 15′ 3″, did not yield sufficiently easily under the pressure to which they would be subjected on the near side in passing round the curve; or (3) both causes might possibly have been combined.

Great-Western.

22nd March, 1876.—The 1 p.m. passenger-train from Leamington for Honeybourne left the rails near the Claverdon station. The engine fell over into a field, but the rest of the train remained on the embankment. Four servants of the Company were injured. The train was apparently running at greater speed than was consistent with safety, with a saddle-back tank-engine of short wheel-base, on a permanent-way not of the best description, and deficient in ballast.

4th April, 1876.—As the 8.35 a.m. broad-gauge express passenger-train from Plymouth for London was approaching within 3¼ miles of the Paddington station, at a speed of nearly 60 miles an hour, the third vehicle behind the tender left the rails. The train was pulled up in a quarter of a mile, with all the wheels of the engine and tender, and the trailing wheels of the break-van next behind the tender, still on the rails, but with the leading and middle wheels of the break-van and the wheels of all the passenger-carriages off the rails. No one was injured. The permanent-way at the spot where the train left the rails was undergoing alteration. The materials were all new, but there were not sufficient fang-bolts to secure the rails to the sleepers. When alterations of this nature were being carried out, and the permanent-way was in a temporary condition, with the ballast thrown out and the rails half-bolted to the sleepers, it was desirable materially to reduce the speed of such fast trains.

24th May, 1876.—As the down-express passenger-train from Paddington for Exeter was travelling round a curve of 45 chains radius, between the Collumpton and Hele stations, at a speed of 60 miles an hour, the leading wheels of the leading carriage left the rails. The train travelled for about 2¼ miles in this condition, until, as it was being brought to a stand, the off-leading-wheel of the carriage struck the check-rail of a crossing, and the carriage was diverted to and struck the down platform of the Hele station, damaging about 90 feet of the coping. No passenger was injured. The permanent-way at the point where the wheels left the rails had been lifted five days previously, the ballast having been thrown out for the purpose. The longitudinal sleepers were thus deprived of the support which the ballast would otherwise have afforded them, and the preservation of the gauge between the rails depended solely on the strap-bolts and through-bolts, which were placed at unusually wide distances of 15 to 16 feet apart. These ties were insufficient, and the gauge widened under the strains produced by the passage round the curve of the tank-engine, weighing 40 tons, so as to allow the off-wheel of the leading carriage to drop inside the rail. For trains of this description running at the highest speed it was obviously desirable that the permanent-way should be maintained in high condition, which was not the case on that part of the line.

July 27th.—As the up-express passenger-train, known as the "Flying Dutchman," timed to leave Exeter at 10.30 a.m. for London, was travelling at a speed of 60 miles an hour, on a falling gradient of 1 in 200, and a curve of 170 to 200 chains radius, past Long Ashton, near Bourton, on the Bristol and Exeter section, the off-leading-wheel of the leading bogie-truck of the engine mounted the off-rail. The engine crossed the down-line, and, after striking the slope of the cutting beyond it, turned over and over, and came to rest on its side 527 feet from the point at which it first mounted the rail. The van and carriages, released from the engine by the breaking of the couplings, continued their course, and came to a stand 170 feet beyond the engine, and three of the vehicles left the rails with all their wheels. The engine-driver and fireman were killed, and 14 passengers and two servants of the Company were injured. The permanent-way at the site of the accident was not in good condition. The off-rail rested loosely on the longitudinal sleeper, and the sleeper loosely on the ballast. The line was not in good level, and the gauge was slightly tight. The first wheel mounted at a defective place in the off-rail, and it did so, apparently, from no other cause than the uneven condition of the permanent-way, combined with the speed of the train.

September 4th.—As the 10.35 a.m. passenger-train from Plymouth for London was passing through the Challow station, at a speed of about 50 miles an hour, the engine came into collision with a stick of timber about 30 feet long, and varying from 10 inches to two feet in diameter, which was supported by a portable crane. The smoke-box at the leading end of the engine was smashed, the steam-pipe in it was damaged, the funnel was carried away, and the front tube-plate was stove in. A post-office van, the second vehicle behind the tender, had an axle-box broken, and the foot-step of the carriage next behind it was damaged. The engine remained, however, on the rails, and the train ran about a mile and a half before it could be brought to a stand. No passengers complained of injury, nor were any of the Company's servants injured. The evidence was somewhat conflicting, as between the signalman in the cabin and the contractor for loading the timber; but such an accident could not, of course, occur if the timber crane were sufficiently far from the main line.

September 7th.—As the 9.15 a.m. passenger-train from Bristol for Radstock and Frome was passing near Radstock, on the North-Somerset Branch, round a curve of about 30 chains radius, and up a rising gradient of one in 70, the leading-wheels of the engine suddenly left the

rails on the outside of the curve. The trailing-wheels shortly afterwards left the rails on the inside of the curve, and the train was brought to a stand in about 150 yards, the driving-wheels remaining on the rails. No vehicle in the train left the rails, and no passengers complained of injury. The evidence was conflicting. The line was under repair, and the platelayers allowed the train to approach them without any warning to the engine-driver, at a time when the rails were not in a sufficiently good condition of adjustment to allow the engine to pass safely.

27th December.—As the 10.40 a.m. passenger-train from Calne for Chippenham, consisting of a six-wheeled, four-wheel-coupled, saddle-backed tank-engine, a guard's break-van, and a composite and a third-class carriage, was travelling in a cutting, round a curve having a radius of 28 chains, and up a short rising gradient of 1 in 106, about two miles from Calne, the engine suddenly left the rails on the outside of the curve. It then ran up the side of the cutting, turned round, became reversed, fell over on its side, and lay, nearly bottom upwards, 80 yards from the point at which it first mounted. All the vehicles behind it left the rails. 5 passengers and 2 servants of the Company were injured. The engine-driver, a young and inexperienced man, was travelling at too high a speed, with his engine bunker in front, and probably with damaged springs, over a portion of line not in first rate order. An engine-turntable was required at Calne, to avoid the necessity of running engines with the wrong end in front, when, as in this instance, there was a considerable preponderance of weight on the leading wheels.

Highland.

12th August.—As the 5.20 p.m. mixed-train from Forres for Keith, consisting of an engine and tender, one waggon, four first-class carriages, five third-class carriages, and one passenger break-van, was passing round a curve of 11⅓ chains radius, about 130 yards from the west end of the platform at Forres station, a first-class carriage was observed to have left the rails. The remainder of the train, with the exception of one vehicle, subsequently left the rails wholly or partly. The train was stopped about 86 yards beyond the point where the first carriage left the rails, which was immediately after passing over a pair of trailing points at the east end of the loop-line into the Forres station, where the single line to Keith commences. The engine and tender, and the waggon next to it, did not leave the rails. The permanent-way was in a defective condition, and failed under the train, which, as regarded the weight of the chairs, was far less than is now required by the Board of Trade.

Lancashire-and-Yorkshire.

3rd May, 1876.—As the empty carriages which had formed the 9 p.m. train from Manchester to Accrington were being pushed by the engine through a cross-over-road on the Burnley side of the Accrington station, the van at the tail of the train left the rails, came in contact with the parapet of a viaduct, and knocked down a portion of the parapet into the street below. A man who was passing along the street had his face injured by a stone. The off wheel of the van took the wrong side of the fixed point of a crossing, and the near wheel mounted the opposite check-rail, from some cause not determined.

17th September.—A part of a train due to leave the Exchange Station, Liverpool, at 1.20 p.m. left the rails, after running a third of a mile, close to the Great-Howard-Street Junction cabin. The fireman was killed, and four passengers and the engine-driver and guard were injured. A gang had been employed in relaying the line, which was not in a safe condition, and no sufficient warning was given to the engine-driver of the approaching train.

London-and-North-Western.

27th February, 1876.—Two engines and eight waggons of a special goods-train ran off the line at Eccles Junction in consequence of a rail being taken out of the permanent-way. One engine-driver and two firemen were injured. A relaying gang had been at work all day putting in new rails near this junction. Previous to the accident a flag-man had been sent out to warn the driver of a passenger-train, which passed slowly over the new rails. A closure rail was then taken up to be drilled for fish-bolts. The flag-man was returning to his work when a special goods-train not expected was observed to be approaching. The foreman-platelayer ought to have kept the flag-man out.

22nd November, 1876.—The passenger-train due to leave Birmingham at 6 a.m. for Liverpool came into collision, at a speed of 35 miles an hour, with a four-wheeled barrow, loaded with one milk-can, at the Madeley station. Two porters were pulling, and a farm labourer was pushing the barrow across the line, not knowing that the train, which was nine minutes late, was approaching, on a foggy morning. The barrow and can were destroyed, but no one was injured.

London-Brighton-and-South-Coast.

8th June.—As the 8.57 p.m. passenger-train from the Victoria station, London, for South Croydon, was running at a speed of 15 miles per hour, on a rising gradient of 1 in 100, and round a curve having a radius of 1,100 feet, near Croydon, the leading wheels of the engine left the rails, in consequence of a brick having been placed, either wilfully or by accident, upon the off-rail. At the end of 112 yards the other wheels of the engine also left the rails, and the engine then turned round and fell over with its wheels in the air; 22 passengers and two servants of the Company were injured. At the point where the engine left the rails there was a level-crossing which the Company intended to do away with.

16th June.—As the 5.18 p.m. passenger-train from Victoria for South Croydon, consisting of a tank-engine and eight passenger-carriages, of which two were brake-carriages, was approaching the Crystal-Palace station, the leading wheels of the engine left the rails at the diamond-crossing of the junction between the line from Victoria for London-Bridge and the line from Victoria for South-Croydon. After running for 56 yards off the rails, the off-leading-wheel of the engine struck the check-rail of another crossing, and the engine was turned against the up-platform on the main-line side of the Crystal-Palace station, a coping-stone of which was displaced. None of the carriages of the train left the rails, and no passengers were injured. Two causes contributed to produce the accident. One cause had reference to the condition of the permanent-way, the other to the condition of the engine. The super-elevation of the outer rail of the curve, which it is always more or less difficult to adjust at diamond-crossings of curved lines, was lost in approaching the crossing, partly by an actual fall of the outer rail, and partly by a rise of the inner-rail; and a certain amount of weakness in the off-trailing-spring tended to disturb the balance of the engine. To prevent such an accident from again occurring, it was desirable, besides taking care that the engine springs are sound, and the permanent-way is in better level, and rather wider in gauge, to add a check-rail at the point where the engine mounted the rail.

Manchester-South-Junction-and-Altrincham.

14th July.—As the 4.25 p.m. passenger-train from Bowden for the Oxford-Road station, Manchester, was travelling at a speed of about 20 miles an hour, round a curve of 24 chains radius, at a distance of 545 yards from the Cornbrook junction, or 1½ miles from the Oxford-Road station, Manchester, the engine left the rails on the outside of the curve, about 100 yards from its commencement. After running forward, partly on the rails and partly on the ballast, for 75 yards, it struck the parapet-wall on the near side, and then turned over and lay, wheels uppermost, across both lines of rails. The van and five carriages following it also left the rails; and the van next behind it, after striking the parapet-wall on the off side, was brought to a stand on the down-line. The other three carriages and the van at the tail of the train remained on the rails. The engine-driver was killed by falling under the engine, but the fireman, though severely shaken, was not materially injured. Three passengers complained of injury. It appears that the ganger of platelayers, who was in charge of this portion of the line, whilst repairing the permanent-way, observed that the level of the rails required adjustment, and he proceeded to "lift it" between the passage of the trains. He thus caused an irregularity of surface, which would naturally tend to produce more or less of oscillation in a passing-train. This was felt by the engine-driver of a train which preceded the one that met with the accident, and he shook his fist in anger at the platelayers as he passed. The ganger says that he immediately attended to the particular joint which he thought had caused the oscillation, in consequence of its having been packed too high. But he had lifted two or three lengths of rails when the Bowdon train approached; and there can be no doubt, that on meeting with a sudden irregularity of surface, the engine began to oscillate, and after passing over about 20 yards of the newly lifted road, it was thrown off the rails. The ganger had, in this instance, weakened the road by the removal of ballast, and rendered it irregular by lifting, and yet he had

omitted to give the slightest warning of the fact to approaching engine-drivers. According to a rule in the Company's rule-book, it was his duty to show a green flag to trains, in order to slacken their speed when the road was under repair. He stated that he had not had a green flag in his possession for two years, which was an irregularity; but he had a red flag, which he might have sent back to warn the engine-drivers. Care should be taken to prevent any lifting being done in future without such a precaution being adopted.

MIDLAND.

22nd November, 1876.—The 9.15 p.m. express-train from St. Pancras for Scotland was approaching the Heeley Station, near Sheffield, at a speed, according to the engine-driver, of 60 miles an hour, when the wheels of the leading bogie-truck of a Pullman car dropped in between the rails. The permanent-way was torn up for a distance of 213 yards, and at the end of 256 yards the Pullman car fell on its side foul of the up-line; five vehicles behind this car also left the rails. Five passengers and the guard were injured. The fastenings between the chairs and the sleepers gave way on and near a bridge under the line during the passage of the engine and tender, weighing together 62 tons 8 cwt. The damage thus occasioned to the permanent-way allowed the wheels of the six last vehicles to drop in between the rails, whilst the engine, tender, and two leading vehicles ran forward past the station. It was necessary to maintain the permanent-way in stronger condition. The hind guard felt the automatic continuous break self-applied as the first indication of anything being wrong in the train.

MID-WALES.

1st July.—As the 3.40 p.m. Midland Railway Company's down-passenger-train from Hereford for Brecon was passing the Three-Cocks junction station, the engine, tender, and four of the carriages left the rails. The accident was found to have arisen from the combined effect of a train travelling at too high a rate of speed on a sharp curve of 7½ chains radius, over a defective and ill-constructed permanent-way at the crossing.

NORTH-EASTERN.

19th July.—As the 12.20 p.m. Great-Northern passenger-train from York for Doncaster viâ Knottingley, was passing through the Burton-Salmon junction, the engine left the rails. After running for a short distance, the whole of the vehicles following the engine were also thrown off the rails, but they all came to a stand, on their wheels, within a distance of about 90 yards. Of eight passengers in the train, only one complained of a contusion. No servants of the Company were injured. The flange of the off-leading-wheel of the engine struck and mounted at the fixed-point of the tongue of the crossing of the up-line towards Knottingley by the up-line towards Normanton, on the south of the Burton-Salmon junction. The gauge was too tight between the tongue of the crossing and the rail opposite to it of the Knottingley line. The tongue having been, as regarded this line, on the outside of a curve of something less than 18 chains radius, and also rather low, there was a tendency for an engine-wheel to mount at it, which would only be counteracted by the action of the check-rail. It was desirable that trains should not pass through the junction towards Knottingley at a speed of more than 15 miles an hour.

25th July.—As the 9.10 a.m. passenger-train from Crook due from Bishop Auckland at 9.40 a.m., was entering that station, a third-class carriage, the third vehicle from the engine, left the rails at a set of facing-points. Three passengers complained of injury. There was no damage either to the rolling stock or to the permanent-way. The accident was caused by an imperfection in the temporary mode of fastening the tongue, during the repair of the connecting-rods of the facing points.

1st August.—As the 9.10 a.m. passenger-train from Crook, due to start from Bishop Auckland at 9.40 a.m., was leaving that station, the engine and tender left the rails with all their wheels. No passengers were injured. This accident was caused by the absence of two out of the three wedges by which the check-rail opposite the fixed point of the crossing should have been kept in its place, owing to which the right wheels of the engine and tender were enabled to take the wrong side of the fixed point, and then to leave the rails.

SUMMARY.—CLASS A.

The 23 investigated accidents in this class,—principally from obstructions or defects in connexion with the permanent-way or works,—occasioned the death of 7 servants of Companies, and injury to 69 passengers and 21 servants of Companies. In 13 cases there was defective maintenance, and in 4 cases defective construction, of permanent-way or works. In 2 cases there was also defective maintenance, and in 1 case defective construction, of rolling-stock. In 4 cases there were insufficient or inadequately enforced regulations, in 11 cases negligence or mistakes of officers or servants, and in 9 cases excessive speed, having regard to the permanent-way or rolling-stock. The accidents at facing-points, which are more numerous, are placed by themselves in Class I. (page 25).

The Great-Western Railway is the most conspicuous in this class; and the state of the Bristol and Exeter section of that line led to a detailed inspection, which proved it to be in very bad condition.

Of casualties reported to the Board of Trade but not investigated, there were 104 cases of passenger-trains or parts of them leaving the rails; and 46 cases of goods-trains or parts of them leaving the rails. There were also 204 cases of trains coming into collision with obstructions, including cattle; and 68 cases of trains running through gates at level-crossings; as well as 19 cases of slips in cuttings or embankments, and 464 cases of broken rails.

B.—*Accidents from Boiler-Explosions, or from Failures of Axles, Wheels, or Tyres, or from other defects in Rolling-Stock.*

CALEDONIAN.

29th August.—The 3.12 p.m. down passenger-train from Carlisle for Glasgow came into collision, 150 yards north of the Burnhouse signal-cabin, with some waggons forming part of the 4.50 p.m. up goods-train from Glasgow for Carstairs, which waggons, owing to the fracture of an axle, were thrown foul of the down-line as the passenger-train was approaching. Ten passengers and the driver and fireman of the passenger-train were more or less seriously injured. The surface of fracture of the axle of the waggon which thus led to the accident showed a flaw, not visible from the exterior, about two inches long and half an inch broad. There was no name or date upon the axle, and nothing was known of its history.

Glasgow-and-Paisley-Joint.

28th December.—The 5.16 p.m. Glasgow-and-South-Western passenger-train from St. Enoch's station, Glasgow, for Carlisle, came into collision in passing the Pollok junction, with a waggon of the 5 p.m. pilot-goods-train from the Pollok junction for the College station, which waggon was thrown foul of the up-line as the passenger-train approached. No blame attached to any of the servants of the Company. The waggon was thrown off the rails in shunting, in consequence of the irregularity in the width and height of the buffers of the waggons, which belonged to the Calder Iron Company. Arrangements were in progress for removing such shunting operations from the main line.

Glasgow-and-South-Western.

28th March, 1876.—An engine, tender, van, and carriage, conveying the Company's workmen from Kilmarnock for Irvine, was passing the Spring-Hill Junction when the boiler of the engine exploded. Four servants of the Company were killed and nine injured. The crown of the fire-box had apparently become overheated from want of water. There were no vertical stays, the roof-stays resting merely on the walls of the fire-box.

8th December.—A runaway engine came into collision with a train of empty carriages at the Ayr station. Two men at the coaling-stage at Hawkhill, near Ayr, took upon themselves, in the absence of the engine-driver and fireman, who had gone to dinner, to move an engine that had been left standing there. In turning on the steam they broke off the fulcrum-stud of the regulator-handle, and the valve flew open. Knowing little of the management of an engine, they were unable to arrest its progress, and, becoming alarmed, they jumped off, The signalman unaware of the absence of the engine-driver, allowed the engine to pass on to the main line, along which it proceeded until it came into collision with a passenger-train standing at the Ayr station, the passengers by which had fortunately alighted. The fulcrum-stud which broke showed a flaw extending over 4–5^{ths} of its area.

Great-Eastern.

5th June.—As the 7.41 p.m. up-passenger-train from Enfield for Liverpool-Street, London, was running at a speed of 30 miles an hour, near the Edmonton junction, the tyre flew from the near leading-wheel of the break-carriage next behind the engine. There was no damage to the rolling-stock, excepting the fracture of the axle-box and foot-board of the break-carriage. No other vehicle in the train left the rails, and no passenger complained of injury but the under-guard was shaken. The tyre was of steel, by Messrs. Vickers and Co. of Sheffield. It had been in use since March 1873, and its thickness had become reduced from $2\frac{1}{8}$ to $1\frac{1}{8}$ inch. It broke at a stud-hole. The method of fastening the tyre to the wheels by a dovetail on one side and a stud on the other side was defective. The better principles, of continuous clips, with square shoulders round both sides of the wheel, had frequently been pointed out, and were to be adopted.

Great-Northern.

16th September.—As a newspaper-train, 5.16 a.m. from King's-Cross, was travelling near Hatfield, at a speed of from 45 to 50 miles an hour, the crank-axle of the engine broke, allowing both the driving-wheels to get inside the rails. The steam was at once shut off, and the engine was brought to a stand in 927 yards. At 464 yards from the point where the axle broke, 5 lengths of rails were displaced on the outside of the curve. At this place the train appears to have been separated into three parts, and most of the vehicles left the rails. Five passengers, three guards, and a Post Office letter-sorter complained of being shaken. There was a flaw through the greater portion of the fractured section, which did not show on the outside.

Great-Northern of Ireland.

3rd May, 1876.—When the 8.30 a.m. mixed-train from Enniskillen for Bundoran had reached a point $1\frac{1}{2}$ miles from the Ballyshannon station, a composite-carriage, break-van, and third-class carriage became separated from the rest of the train, and left the rails; the composite-carriage and break-van running down the left slope of an embankment, and the third-class carriage remaining on the ballast with its middle wheels almost on the rails. A waggon, the eighth from the tender, had its front wheels on the rails, but its trailing wheels and axle gone from under it; and the ninth waggon was off the rails. Two passengers were injured. The accident resulted from the fracture of the trailing axle of the eighth waggon, which was found broken in two places, about 9 inches from the boss of each of its wheels. The axle was of coarse iron, but there was no appearance of flaw on either surface of fracture. Upon trial it was found to be of very bad quality, and that its ultimate resistance to tensile strain was barely 2 tons to the square inch.

Lancashire-and-Yorkshire.

13th December.—As the 11.20 a.m. passenger-train from Liverpool for Southport was travelling between the Freshfield and Ainsdale stations, the head-guard discovered that two out of three loaded trucks attached to the tail of the train had separated from the truck in front of them. The guards in the two vans, one in front of and the other behind the passenger-carriage, applied their continuous breaks, and thus by an error of judgment brought the train to a stand, on an easy falling gradient of 1 in 650. The two trucks, which were following the train, then overtook and came into collision with it. One passenger complained of injury. No explanation was obtained of the cause of the trucks becoming uncoupled. It was desirable, when loaded trucks were thus run behind a passenger-train, that a break-van should be placed behind them, to be used in the event of their becoming uncoupled from the train.

London-and-South-Western.

7th February, 1876.—As the 5.20 p.m. passenger-train for Southampton, Weymouth, and Portsmouth was running between Basingstoke and Micheldever, at a speed of about 40 miles an hour, on a falling gradient of 1 in 230, the tyre flew from the off-leading-wheel of a break-van, which van with two carriages behind it left the rails. The train was pulled up within a distance of half a mile. One passenger complained of injury. This was another proof of the necessity for adopting the principles so often advocated in tyre-fastenings, of squared-shoulders and continuous clips on both sides of the tyre, so as effectually to prevent them from flying off the wheels in event of fracture.

Midland.

16th February, 1876.—The 2.4 a.m. up mail-train from Leicester for St. Pancras, whilst running at a speed of 40 or 50 miles an hour, came into collision with some waggons which, after becoming detached from the 2 a.m. down-waggon train from the Brent sidings for Wellingboro', had left the rails and had fouled the up-line, whilst the remainder of the train travelled on to Luton without the engine-driver discovering his loss. A pair of wheels of one of these waggons had left the rails at Chiltern Green, and had continued running in this condition for some distance, until the draw-bar of the next waggon behind it broke after the train separated into two parts. The guard in the van attached to the waggons went back to Chiltern Green to protect the tail of his train; but there was no one to proceed in the opposite direction to warn the engine-drivers of up-trains. The driver of the goods-train had no means of knowing that he had lost a part of his train. The question of such accidents becomes more serious as the main lines running parallel and close to each other are increased in number, and further provisions for safety may be required.

North-British.

11th December.—As the 5.20 p.m. passenger-train from the Waverley station, Edinburgh, for Haddington, was proceeding on its journey, after having been stopped at the mouth of the Calton Tunnel, the engine became separated from its train. The engine passed through the Abbey-Hill junction along the main-line, while the carriages were, in following it, turned down the Leith and Granton branch. The carriages ran along the branch with increased speed (on falling gradients of 1 in 18 and 1 in 107) to the Easter-Road junction, where they were turned into the Leith-Walk goods-yard; and there, at 92 chains from the Waverley station, they came into collision with a break-van and an engine which were just entering the goods-yard on their arrival from Portobello. 13 passengers and the guard were injured. The engine had not been properly coupled to its train before it started from the Waverley station. In the absence of the usual screw-coupling, a carriage-coupling was used. The signalman at the Abbey-Hill junction had received notice of the

approach of the train, and supposed, when the engine only passed him, that he had been improperly warned. He therefore allowed an up-passenger-train from the Leith and Granton branch to pass towards the Waverley station. In order to do so, he was fortunately obliged, by his locking-apparatus, first to move the facing-points of the junction, and thus to prevent a collision from occurring between the detached carriages and the up-branch-train.

NORTH-EASTERN.

12th December.—A goods-train consisting of engine, 20 waggons, and a van, started for Darlington from the goods yard at West Hartlepool. It was stopped at the home-signal, and after standing there for about three minutes the fire-box of the engine burst. The driver was injured and the fireman died from the injuries he received. The engine commenced running at the end of 1868, and had up to the time of the accident run 221,356 miles; it had been altogether nearly one and a half years in the shops, the last occasion having been in June 1876. The safety-valves were screwed down to a pressure of 120 lbs., and the gauge glass was showing this pressure at the time of the accident, the steam having just commenced to blow off. An examination of the fire-box of this engine leaves very little room for doubting that the explosion was caused from the fact of a large proportion of the stays at the front of the fire-box below the fire-hole door having lost their hold in the copper-plate which had become worn through the action of the fire, and from this copper-plate having, round the bottom of the fire-hole door, become reduced from its original thickness of $\frac{3}{8}$th inch to not more than, in some places, $\frac{1}{8}$th inch. The boiler-smith who repaired, and states that he examined, the fire-box only a week before the explosion, could not have properly performed the important duty entrusted to him, or he could have hardly failed to detect the bad condition of a large proportion of the stays and the thinness of the edge of the copper-plate of the fire-box round the bottom of the fire-hole door.

SUMMARY.—CLASS B.

The 12 investigated accidents in this class,—principally from failures in the rolling-stock,—occasioned the death of 5 servants of Companies, and injury to 33 passengers and 17 servants of Companies. In 2 cases there were failures of drawbars or couplings, in 2 cases explosions of locomotive-boilers, in 3 cases failures of axles, and in 2 cases failures of wheel-tyres.

The total casualties reported to the Board of Trade comprise, as will be seen by the table, Appendix No. 4, 397 cases of axle-failure, 880 cases of tyre-failure, 74 cases of wheel-failure, 30 cases of coupling-failure, 13 cases of the failure of parts of locomotive-boilers, and 4 of the failure of break-apparatus.

C.—*Accidents from Trains entering Stations at too great Speed.*

GREAT-WESTERN.

4th September.—As the branch-train running in connexion with the 3.15 p.m. passenger-train from Bristol was entering the Weston-super-Mare station the engine came into collision with the stationary-buffer at the end of that station. Two passengers were said to have received contusions. The engine-driver approached the station bunker-first, at rather too high a speed, on a day when the rails were slippery from misty rain, and he was not supplied with sand-boxes at the bunker end of his tank-engine.

GREAT-WESTERN AND LONDON-AND-SOUTH-WESTERN JOINT.

13th September.—The 6.45 p.m. passenger-train from Weymouth for Portland, in running into the Portland Station, came into violent collision with the buffer-stops at the end of that station. The buffer-stops were knocked out of place, and the front of the engine was badly damaged. One passenger-carriage was materially, and others were to a less extent, damaged. 22 passengers and the driver were shaken or injured. There was a want of caution on the part of the engine-driver, who evidently approached the station at too high a speed, under the disadvantageous conditions of very slippery rails, two extra vehicles on his train, and only one guard in the break-van at the tail of it. Having regard to the steep gradients on this line, a larger amount of break-power in the trains was required, under control of engine-drivers and guards.

LONDON-BRIGHTON-AND-SOUTH-COAST.

20th February, 1876.—As the 10.15 p.m. passenger-train from Ford to Littlehampton was running into the Littlehampton station it came into collision with the buffer-stop at the end of the passenger-line at that station. Four passengers and the guard were injured. The train was travelling at too high a rate of speed, and the breaks were not applied sufficiently soon, in a very slippery condition of the rails. It would be better to employ the engine-drivers for more regular hours, than to allow them to work for 14 or 16 hours for 2 days and to do nothing on the third day.

SUMMARY.—CLASS C.

Three accidents in this class,—of trains entering stations at too high a speed,—were investigated during the past year, and they were the occasion of injury to 28 passengers and 2 servants of Companies. Such accidents must always be due to a want of caution on the part of engine-drivers, coupled in most cases with the disadvantageous conditions under which they are working as regards gradients, slippery rails, and want of break-power.

D.—*Collisions between Engines and Trains following one another on the same Line of Rails, excepting at Junctions, Stations, or Sidings.*

GLASGOW-AND-SOUTH-WESTERN.

1st April, 1876.—The 3.30 p.m. express-passenger-train from Glasgow for Carlisle overtook and ran into the 6 p.m. live-stock train from Dumfries for Carlisle, which had come to a standstill, between the Dornoch and Gretna-Green stations, on the failure of the injector of its engine. One passenger was injured. The live-stock train was stopped, first for 10 or 15 minutes, and secondly for five minutes. The guard went back to protect it on the first occasion for 150 yards, and on the second occasion for 340 yards, and sent a platelayer back, who went altogether 720 yards from the stationary train. If the block system had been in force upon this part of the line, or if the express-train had been furnished with continuous breaks, the collision would not have occurred.

GREAT-EASTERN.

11th November, 1876.—The 5.45 a.m. down-passenger-train from Liverpool-Street overtook and came into collision with a ballast train, which was slowly travelling between the Manor-sidings, 4¼ miles, and the Stamford-Hill station, 5 miles from the Liverpool-Street station. Two passengers and one servant of the company were injured. An inexperienced signalman at Stamford Hill, who was misled by receiving an attention-signal improperly, gave line-clear to the signalman at the Manor sidings, who was also inexperienced, and was unprovided with a clock. If the engine-driver of the passenger-train had kept a better look-out he might have mitigated the force of the collision.

METROPOLITAN.

1st July.—The 11.11 p.m. Great-Western passenger-train from Bishopsgate for Addison-Road and the Mansion-House came into collision, shortly after leaving the Farringdon-Street station, with the 11.15 p.m. Metropolitan-District passenger-train from Bishopsgate for the Mansion-House, which had been brought to a stand in consequence of the failure of its engine. The collision occurred inside, and about 160 yards from the mouth of the Clerkenwell tunnel, and about 400 yards on the west of the Farringdon-Street station. The Great-Western engine, without mounting, pushed the side-framings apart, and penetrated through three partitions of the last carriage on the Metropolitan-District train, and eight other carriages were damaged. Thirty-six passengers and six Company's servants were injured. The Metropolitan-District train, after starting from the Farringdon-Street station, was brought to a stand, on the failure of its engine from the fracture of its piston-rod, within about a quarter of a mile of that station; or 400 yards from the signal-cabin; and its tail-lamp would have been visible for about 180 out of those 400 yards. Within about five minutes, before the guard, after ascertaining from his engine-driver the cause of the stoppage, had time to get back to protect it, the following Great-Western train came into collision with it with great violence. The Farringdon-Street signalman acted very unwisely in starting the Great-Western train, under the belief that the Granville signalman must have made a mistake, without having received line-clear for the District train. It was necessary to prevent the dangerous practice of "shaking-up" on the telegraph-instruments.

SUMMARY.—CLASS D.

The 3 investigated accidents in this class,—of collisions between engines and trains following one another on running lines,—were the occasion of injury to 39 passengers and 7 servants of Companies. Collisions which occurred within fixed signals are referred to in other classes,—as, for instance, collisions at junctions in Class E, and collisions at stations and sidings in Class F.

E.—*Collisions at Junctions.*

CALEDONIAN.

22nd April, 1876.—As the 2.55 p.m. down passenger-train from Motherwell for the Southside station, Glasgow, was crossing the line from Greenock at the Gushetfauld's-junction, its engine struck the tender of the engine of an up-train of mineral-waggons, the engine-driver of which had, after taking water at a tank near the up-home-signals, started without permission. Forty passengers complained of injury. The engine-driver and acting fireman of the empty-mineral-train neglected to observe before leaving the water-tank whether the signal was lowered for them to cross the main lines at the junction.

2nd December.—The 6.50 a.m. passenger-train from Lesmahagow came into collision, at the Southfield junction, on the Lesmahagow branch, with a mineral-train from the Lesmahagow junction. 5 passengers were injured. The signal-arrangements were defective, and the mode of working the junction was faulty. The two trains were allowed to approach each other on the same line of rails, and on heavy gradients, neither engine-driver having any defined point at which to stop. The engine-driver of the passenger-train, with a longer train than usual, was approaching the junction on a rising gradient with more than customary speed, to enable him to draw his train clear of the points through which he had afterwards to set back. The mineral-engine-driver, with a heavy train, and an inexperienced breaksman, and greasy rails, slightly over-ran, on a falling gradient, the point at which he was accustomed to stop. The introduction of the block system, of improved signal-arrangements, which were in progress, and of a new mode of working, would prevent such trains from approaching the junction in future at the same time, and the risk of such a collision.

20th December.—As the 6.30 p.m. mixed passenger-and-goods train from Forfar for Kirriemuir, due at the Kirriemuir junction at 6.37 p.m., was being backed along the down-mail-line at that junction (where there was no facing-point, but only trailing-points and a cross-over-road), prior to entering the Kirriemuir branch, it was run into by the 3 p.m. down-goods-train from Perth for the North, due at the same junction at 4.44 p.m. Three passengers and 3 servants of the Company were injured. The points and signals at this junction were not interlocked, nor was the block system in force at the time of the collision; and there were no home-signals, but only distant-signals. The down-distant-signals did not, for some unexplained reason, show danger to the engine-driver of the goods-train, who approached it in a snow storm. He had, consequently, no warning of the passenger-train being in his way until he was too close upon it to prevent the collision. The block-system, afterwards brought into force, would be a great safeguard against such accidents in future; but the interlocking of the points and signals was also urgently required.

CITY-OF-GLASGOW-UNION.

26th September.—The 6 p.m. North-British Company's passenger-train from the College station, Glasgow, for Airdrie, came into collision, at the College junction, with a Glasgow-and-South-Western Company's goods-train, which was proceeding from the Glasgow-and-South-Western goods-yard to that of the North-British Company, both of which are close to the College junction. Six passengers and the breaksman of the goods-train were injured. The signalman in the College-junction cabin omitted to see that a signal, 90 yards from his cabin, and visible from his window, which he had lowered for a previous North-British train, had returned to danger, when he put back the lever in his cabin. This signal became jammed by slag-ballast thrown on the wire by the permanent-way men of the Glasgow-and-South-Western-Company, remained improperly lowered for half-an-hour, and was off at the same time as the conflicting signal for the goods train, and the two trains were thus lured forward to the collision. Improvements as regarded telegraphic communication, signal-working, and siding-accommodation were recommended.

GLASGOW-BARRHEAD-AND-KILMARNOCK-JOINT.

16th May, 1876.—As the 7.22 a.m. passenger-train from Kilmarnock for the South-Side station, Glasgow, was passing the Victoria-junction it came into collision, at a speed of about 15 miles an hour, with an engine in front of a train of empty carriages, which was standing on the crossing of the down-line by a line leading from the up-line into a dead-end. Forty-eight passengers and three servants of the company complained of injury. The engine-driver of the empty carriage-train passed the stop-signal at the South-Side cabin at danger, and fouled the down-line leading into the South-Side station whilst the signals were off for a down passenger-train to enter the station. The collision would not have occurred if the down-home-signal for the South-Side station had been interlocked with the facing-points on the up-line leading into the dead-end.

GREAT-NORTHERN.

23rd September.—As the 6.15 p.m. passenger-train from Leeds for Bradford was running through the Hammerton-Street junction it came into collision with the Bradford pilot-engine, which, while shunting in the goods-yard, had been permitted by an acting fireman to foul the line on which the passenger-train was approaching. Five passengers and three servants of the company were injured. The acting fireman, who was inexperienced, ran along a goods-line and up a steep gradient of 1 in 50, 100 yards further than was necessary, during the temporary absence of the driver, on being required to move the engine by the yards-men. Safety-points were required, and were afterwards supplied, to protect the passenger from the goods line.

10th October.—As the 6.45 p.m. Great-Northern up-passenger-train from Doncaster for Lincoln was passing through the Holmes West junction, Lincoln, it came into collision with an iron-ore train of the Manchester-Sheffield-and-Lincolnshire Railway Company, which stood foul of the line on which it was running. Four passengers were injured. The junction signalman had been on leave during the day, and his mate, who was doing the duty, had been "ailing." On the signalman's return, he found his mate, his mate's wife, and a lad-porter, who had brought his tea, in the cabin; and his telegraph-bell was ringing for the passenger-train. He did not look to see whether the Manchester-Sheffield-and-Lincolnshire had run clear of the junction before he accepted train-on-line for the passenger-train, and before the lad-porter, who lowered the signal, allowed the passenger-train to approach.

GREAT-NORTHERN, AND MANCHESTER-SHEFFIELD-AND-LINCOLNSHIRE (WEST-RIDING-AND-GRIMSBY-JOINT).

14th April, 1876.—A return special-excursion-train from Cleethorpes for Bradford was run into, at the Adwick-Junction, at a speed of 10 or 11 miles an hour, by a special-passenger-train from Lincoln for Bradford. Thirty-two passengers were injured. The engine-driver of the Lincoln train failed to observe the Adwick-Junction main-line down-signals, which were at danger. The junction signalman unnecessarily called the Cleethorpes branch-train forward by hand-lamp past the branch-line down-home signal, and thus placed it on the down-main-line north of the junction. The collision would probably have been avoided if the Lincoln train had been provided with continuous breaks.

LANCASHIRE-AND-YORKSHIRE.

12th October.—The 10.50 p.m. passenger-train from Manchester for Bolton came into collision, at the Robin-Hood colliery-junction, with the 11.25 p.m. passenger-train from Bolton for Manchester. Five passengers and an engine-driver complained of injury. The last vehicle in a train of empty carriages had previously been thrown off the rails, as the train was being shunted back through a pair of points at Pepper-Hill, near Clifton junction, the guard not having taken the precaution to ascertain, before he gave the engine-driver a signal to set back, that it had quite cleared the points. Both the main-lines had thus been blocked. When one line had been cleared the other line was worked, to Robin-Hood junction, as a single line, under the orders of a station-master from Clifton-junction. The station-master did not properly carry out his regulations. The Robin-Hood signalman, not expecting the train from Manchester to approach his junction on the wrong line, did not open the points of a cross-over-road to allow it to pass to the down, or proper line; and it came into collision with the up-train standing on the up-line.

LONDON-AND-NORTH-WESTERN.

6th June.—As a train of lime-waggons from Whalley-Bridge to St. Helen's was proceeding down a steep gradient between the Dizley and Hazlegrove stations, it was over-taken and run into, near the Norbury siding, by a pick-up goods-train, running with the engine behind the train. The breaksman of the lime-waggons train died from his injuries shortly after the collision. Two breaksmen in the pick-up train, and a cotton-spinner, a brother-in-law of one of the breaksmen, who was riding (against the Company's rules) in one of the vans, were also badly injured. This collision resulted from a most improper method of working the traffic between the Dizley station and the Norbury sidings. Several servants of the Company acted in direct violation of the Company's rules, and the driver of the pick-up train was proceeding at much too high a rate of speed. The block-system, which would have prevented the accident, was in contemplation.

6th October.—A double collision occurred at the Ardwick junction. First, a London-and-North-Western loaded goods-train from the Lancashire-and-Yorkshire branch from Miles Platting came into collision with a London-and-North-Western train of empty waggons from Longsight. Secondly, a Manchester-Sheffield-and-Lincolnshire passenger-train, in leaving the Manchester-Sheffield-and-Lincolnshire Ardwick station, just before the first collison, came also into collision with the train of empty waggons. The engine-driver of the loaded-waggon-train disobeyed the signals, but he was running tender-first and could not see his sand-boxes, and he had no break-van on the train. Goods and mineral trains were commonly run on this branch without break-vans. Improvements were required in the signal and point arrangements, and in the accommodation for working the traffic.

LONDON-AND-SOUTH-WESTERN.

13th April, 1876.—The 9.33 p.m. up-passenger-train from Kingston for the Waterloo station, London, came into collision, 140 yards within the signal-cabin of the Kingston-Junction, with a train of empty carriages, which after standing at the Twickenham station, for the engine to take water was moving forward, in starting again for Clapham-junction. The engine-driver of the passenger-train was misled by the indications of the home and distant signals worked from the Kingston-junction-cabin; and the signalman found, when too late, that those signals, in consequence of the effect of snow upon them, had not obeyed the action of the levers in his cabin, which he had two or three minutes previously placed in the position of danger. The signalman was too hasty in giving line-clear for the passenger-train to approach after the passage of the empty carriage-train, without noticing the repeaters provided in his cabin to indicate whether his signals were working properly.

LONDON-TILBURY-AND-SOUTHEND.

6th December.—The 5.10 p.m. up-passenger-train from North Woolwich for Fenchurch-Street, viâ Bromley, came into collision, at the Upper-Abbey-Mills junction, with the 4.38 p.m. up-passenger-train from Tilbury for Fenchurch-Street. Twenty passengers complained of injury. The signals for the train from North Woolwich were at danger, but were so inefficient that no blame could be imputed to the engine-driver of the branch-train, especially as he was inexperienced in approaching them in the dark. These signal arrangements were to be immediately improved.

MANCHESTER-SHEFFIELD-AND-LINCOLNSHIRE.

15th November, 1876.—The 7.50 p.m. down-passenger-train from Doncaster for Penistone came into collision at the Hexthorpe-junction, during a fog, with an up-mineral-train from Wombwell-Main to the Hexthorpe-mineral-yard. Eight passengers complained of injury, and the guards of the passenger and coal-train were injured. The engine-driver of the passenger-train passed the Hexthorpe down-distant-signal at a speed of 15 or 16 miles an hour, though he could not see the light of it for the fog; and afterwards ran past the home-signal at danger, and into collision with the mineral-train crossing the junction, 60 yards beyond the home-signal. Junction block-working was required to prevent two such trains from approaching the junction at the same time.

MANCHESTER-SOUTH-JUNCTION-AND-ALTRINCHAM.

12th August.—The 11 p.m. Manchester,-South-Junction,-and-Altrincham Company's down-passenger-train from the Oxford-Road station, Manchester, to Bowden, was run into at the Altrincham junction by the 11.25 p.m. Cheshire-Lines Committee's up-passenger-train from Knutsford to Altrincham. Three passengers were injured. The engine-driver of the Knutsford train did not use proper caution in approaching the Altrincham junction. Two unauthorised persons were on his engine, no proper look-out was kept, and no attempt was made to stop until the Junction Company's train was seen crossing the junction, when it was too late to avoid the collision. The guard also had allowed three unauthorised persons to travel in his van, and it was very doubtful whether he kept a good look-out and applied his breaks. As the block system had since the collision been introduced no similar collision would again occur.

METROPOLITAN-DISTRICT.

29th January, 1876.—The 6.17 p.m. passenger-train from the Mansion-House for Hammersmith came into collisitn,

in a dense fog, at the Hammersmith junction, with the 4.53 p.m. passenger-train from the Mansion-House, viâ Addison-Road, for Bishopsgate, the latter train having, after clearing the junction by as much as 170 yards, been allowed to run back down a gradient of 1 in 62 over the junction points. Forty-seven passengers were injured, of whom one afterwards died, and four servants of the company were injured. If continuous breaks had been employed in the hands of the engine-driver, in place of the break-power being distributed between the fireman, the guard, and the breaksman of the Bishopsgate train, the accident would not probably have occurred. It was desirable to add catch-points on this steep gradient, to prevent any train that might thus be stopped on it from running back in future; and not to allow line-clear to be given for another train to pass through the junction until the previous train had cleared these catch-points.

20th February, 1876.—As a Great-Western engine was proceeding from the Westbourne-Park engine-shed towards the Mansion-House station, to fetch a passenger-train, it came into collision, in approaching the Gloucester-Road B. junction, with a Metropolitan-District passenger-train from the High-Street-Kensington station, viâ the Gloucester-Road curve for the Mansion-House. Two of the carriages of the Metropolitan-District train left the rails, and a pair of wheels of the carriage first struck were displaced. Two passengers and a guard were injured. There was a want of caution on the part of the Great-Western engine-driver in approaching the B. junction. It was desirable that the distant-signal should be locked by the home-signal, and that junction-block-working should be introduced.

MIDLAND.

September 25th.—The Glasgow portion of the Midland Company's down-Scotch-express, 10.30 a.m. from London, was run into at the Whitehall junction, near Leeds, by a North-Western Company's goods-train proceeding from Copley-Hill (Leeds) to Milford-junction. Eight passengers and three servants of the companies were injured. The collision was caused by the driver of the goods-train mistaking the meaning of the signals. An up-Scotch-express train was approaching the junction at the same time. "The air-breaks with which the express trains were fitted "did good service on this occasion; that on the up-train "enabled it to be stopped (on the signals being thrown up "to danger) within a safe distance of the junction, and "that on the down train prevented the two rear vehicles "from running in (after the engine had been detached by "the collision) upon the front of the train." If the engine of the goods-train had been provided with a break the driver might have stopped without fouling the junction. An additional line was required on which goods-trains might be brought up to the junction without the risk of their fouling it against the signals.

NORTH-EASTERN.

26th February, 1876.—The 5.45 a.m. mail-train from Darlington for Saltburn came into collision with a mineral-train while passing through Preston junction. Four passengers and an engine-driver and fireman were injured. The passenger-train was running through the junction with the signals duly lowered for it to proceed into the station, but the engine-driver of the mineral-train ran past both the distant and home-signals at danger, and came into collision with the passenger-train 125 yards beyond his home-signal. It was desirable that either junction-block-working or an improved arrangement of lines, sidings, and switches should be introduced.

SUMMARY.—CLASS E.

The 19 investigated collisions in this class,—occurring at junctions,—were the occasion of death to 1 passenger and 1 servant of a Company, and of injury to 241 passengers and 25 servants of Companies. In 16 cases there was negligence or mistake on the part of officers or servants. In 8 cases there was a want of block-telegraph-working. In 9 cases there were defective signal or point arrangements, or want of locking-apparatus. In 2 cases the accommodation was insufficient for the traffic. In 3 instances, there were, either foggy weather, or insufficient regulations, or insufficient break-power respectively, and in one case insufficient establishment. Of 13 Companies concerned in these 19 collisions, there was only one on each system, excepting 3 on the Caledonian, and 2 on each of the Great-Northern, London-and-North-Western, and Metropolitan District systems. The Brighton, Chatham-and-Dover, Metropolitan, and North-London Companies, with heavy traffic through numerous junctions, do not appear in this class. Ireland is not represented in this class.

As remarked by Captain Tyler in his report of the accidents of this class of the previous year, "there will always be more or less of risk at junctions, but this risk will "be materially diminished as the various means of precaution come to be generally "adopted. *Continuous-breaks* under the control of the engine-drivers, to give them "better command of their trains; improved signal and point-apparatus, with inter-"locking, safety-points, and locking bars and bolts at facing-points, to afford complete "control of the traffic to the signalmen, and to prevent them from making mistakes; "junction-block-working, to prevent conflicting trains from approaching a junction at "the same time; the provision of proper accommodation in lines and sidings; and the "careful selection and training of good men, under strict discipline, will all tend to "diminish the number of such collisions."

F.—*Collisions within fixed Signals at Stations or Sidings.*

CALEDONIAN.

19th August.—As the 5.30 p.m. passenger-train from the South-Side station, Glasgow, for Hamilton was standing at the Rutherglen station it was run into by the 4.30 p.m. passenger-train from Greenock for Coatbridge, which was also timed to stop at the Rutherglen station. Five passengers complained of injury. No damage was sustained by the rolling-stock, nor were any wheels thrown off the rails. The engine-driver of the 4.30 p.m. train ran at 13 to 15 miles an hour, past a distant-signal at danger, and, whilst engaged in oiling his machinery, failed to keep a proper look-out on approaching the platform. The signalman at the preceding cabin at Shawfield did not keep his signals up against the 4.30 train, although the 5.30 train had passed his cabin only two minutes previously. The block-system, which would have prevented the accident, was shortly to be put in force. The accident would probably not have occurred if the 4.30 train had been fitted with continuous breaks.

24th August.—The 4.15 p.m. up-passenger-train from Dundee for Perth came into collision with the rear of the preceding 1.0 p.m. goods-train, which had come to a stand about 20 or 30 yards outside of the Barnhill up-distant-signal. Three passengers complained of having been shaken. The engine of the passenger-train and two waggons of the goods-train were considerably damaged. The goods-train had been stopped by signals at the Barnhill telegraph-station, with its van 20 or 30 yards outside the distant-signal, and the guard was to blame for not going back at once to protect it. The engine-driver and fireman of the goods-train seemed to have been under the influence of drink, but stated that they could not proceed for want of steam, and that the coal was bad. The collision would not, in all probability, have occurred if the traffic had been properly worked on the block-system, nor if the passenger-train had been fitted with continuous breaks.

8th December.—As two carriages and a break-van, forming the local portion of the 10.5 a.m. passenger-train from Glasgow for the South, which had been left standing on the main-line at the Carstairs junction while the carriages from Edinburgh and Glasgow were being marshalled in proper order for their journey southward, were running down by the force of gravity towards the platform, to unload their passengers, they were allowed, by the guard, whose break worked stiffly, to come into collision with the other carriages of the combined train. One passenger was slightly injured.

Great-Eastern.

3rd November, 1876.—A goods-train, consisting of an engine and 20 waggons, which had been kept waiting in a siding near the Devonshire-Street goods-station for a passenger-train from Liverpool-Street for Brentwood to pass it, was, after that passenger-train had gone by, set back through a cross-over-road on to the down-main-line; but the passenger-train having been stopped by signals at the next (Canal-Road) signal-cabin, the goods-train was backed into the tail of it. Six passengers were injured. The signalman in the Devonshire-Street cabin ought not to have allowed the goods-train to be shunted back before he received permission from the Canal-Road signal-cabin. But the morning was misty, and the signalman was working under much disadvantage in being obliged to carry on shunting of this description on main lines on which passenger-trains ran very frequently. Re-arrangement of the goods-yards was recommended to avoid obstruction to the passenger traffic.

10th November, 1876.—The 7.55 p.m. down-passenger-train from Liverpool-Street came into collision, in the dark, with the last vehicle of the 7.40 p.m. preceding down-passenger-train in the Enfield station. The tail-lights had been removed from the rear vehicle of the latter train for the return journey. Two passengers were injured. The signalman was inexperienced, and was working under considerable disadvantages, with nothing to guide him as regarded lights on the train or on the platform; but he ought not to have set the points and turned the signal for the 7.55 p.m. train to run along the same line on which he had five minutes before admitted the 7.40 p.m. train.

Great-Northern.

21st January.—The Scotch-express-passenger-train, due to leave Peterborough for London at 6.18 p.m., and consisting of an engine and tender and 10 vehicles, came into collision, whilst approaching the Abbotts-Ripton signal-cabin at full speed, and with the steam still on, with a coal-train due to leave Peterborough in front of it at 5.35 p.m., which, having left Peterborough at 5.53, was being shunted out of its way into the Abbotts-Ripton siding. The down-main-line having become obstructed by the *debris* from this first collision, the Leeds-and-York express-passenger-train, 5.30 p.m. from London, after passing Huntingdon at 6.59 p.m., came into collision, first with the tender and afterwards with certain damaged carriages of the Scotch-express-train.

Thirteen passengers lost their lives and 53 additional passengers were injured. The engine-driver, fireman, and head-guard of the Scotch-express-train, and the engine-driver and fireman and front-guard of the Leeds-express-train, were also injured.

The causes, direct or indirect, of the first collision were hus summed up:

1. The late departure of the coal-train from Peterborough, which prevented it from reaching and being shunted at Abbotts-Ripton before the approach of the Scotch-express-train.

2. The failure to work, during a heavy snow-storm, of the signals at Holme, which prevented the coal-train, running late, from being stopped and shunted at Holme, as intended by the signalman, out of the way of the Scotch-express-train, and without the risk of danger or delay to that train.

3. The want of judgment and precaution exhibited by the station-master at Holme, who might otherwise, after the report made to him by the signalman, and on finding the effect produced by the snow upon his own signals, have inferred that other signals were similarly affected, and have taken measures to warn the engine-driver of the Scotch-express-train, and to prevent him from being deceived by them.

4. The absence of telegraph-speaking-instruments in the signal-cabins at Conington and Wood-Walton, by means of which the signalmen in those cabins might have been informed of the coal-train having run past Holme contrary to the intention of the Holme signalman, and have been warned of the probable condition of their signals.

5. The action of the snow and ice upon the signals at Wood-Walton and Abbotts-Ripton, in preventing them from responding to the action of the levers in the signal-cabins, and in thus causing them to be, not only useless for warning by red-lights the engine-driver of the Scotch-express-train, but also a means by the exhibition of white lights of luring him forward at full speed to the collision.

6. The neglect of the Wood-Walton signalman, who did not either obey par. 13 of the printed regulations applying to "fogs and snow-storms," requiring him, in such weather, to put detonators on the rails, as far as practicable, when his home-signal was at danger, or even employ his hand-lamp to give warning to the engine-driver of the Scotch-express-train.

7. The absence of the platelayers or "fog-men" from the signals at the critical moments, when they were so much required, either to clear the signals of snow and to cause them to work properly, or else, if they could not ensure their efficient working, by means of detonating-signals, to warn the engine-drivers of the trains.

8. The running of fast-through-trains at full speed through such a storm, described as having been the most severe ever known in that part of the country, without the adoption of extra precautions, such as the detention of slower trains, the use of hand-lamps in the signal-cabins, and the employment of platelayers at the signals.

And the causes which operated more particularly in producing the second collision were:—

9. The want of notice, until eight minutes after the first collision, from the Abbotts-Ripton cabin to the Stukeley cabin, by five beats on the telegraph-bell, of the obstruction on the down-line caused by the first collision.

10. The delay of the signalman at the Huntingdon south-cabin in accepting the special-message which the Abbots-Ripton signalman, who commenced to call at 6.45 p.m., endeavoured, after obtaining his attention at 6.47 p.m., to send him, to report the collision and ask for assistance; which special message the Huntingdon signalman might otherwise have received in time to admit of his stopping the Leeds-express-train, and preventing the second collision.

11. The failure to act of the down-distant-signal worked from the Abbotts-Ripton cabin, which continued to show a white light when the engine-driver of the Leeds-express-train passed it, nearly eleven minutes after the first collision.

12. The want of continuous-breaks in the hands of the engine-driver of the Leeds-express-train, to enable him to avoid the second collision, which was the occasion of so much loss of life, after receiving notice from detonating-signals, say 1,000 yards from the site of it, and immediately afterwards from the men on the engine of the coal-train, of something being wrong.

The most important remedies to be considered with a view to the avoidance of such collisions were:—

1. Improvement in the apparatus of fixed-signals, to prevent them as far as possible from becoming inefficient during frost and snow, and to cause them to afford indications to the signalmen when they cease working, or are not working properly.

2. Improvement in the working of fixed-signals, by keeping them habitually at danger instead of at all-right, so as to render them less liable to *stick* in the more dangerous position of all-right.

3. Improvement in the printed regulations for the guidance of station-masters, inspectors, engine-drivers, signalmen, and platelayers, as to their duties during "fogs and snow-storms."

4. Careful supervision in regard to the working of fixed-signals at intermediate, as well as at the principal block-cabins, during snow-storms.

5. The employment by the signalmen of hand-lamps, especially in severe weather, in confirmation of the indications of their fixed signals.

6. The provision and employment of speaking-telegraph-instruments in all the cabins.

7. The temporary stoppage of less important traffic, and the reduction of the speed of fast trains during severe snow-storms, when it is more difficult for engine-drivers and guards to keep a good look out, for signalmen to see out of their cabins, for plate-layers to keep the fixed-signals in efficient working order, and for all the out-door officers and servants of railway companies to perform their duties satisfactorily.

8. The employment of continuous-breaks, by means of which the trains can be brought to a stand, on warnings of danger being received, within more moderate distances, by the action of the engine-drivers, without trusting to the guards, who are frequently unable in cases of emergency to hear the break-whistle from the engine, and who cannot therefore be relied on to co-operate with the engine-drivers when their assistance is most required.

9. The construction of an additional line of rails, already in contemplation, for slow traffic up the Conington Bank.

14th April.—The up-express goods-train from Manchester for London, due to leave Grantham at 3.55 a.m., and to shunt at Corby station for the up-mail-train to pass it at 4.18 to 4.30 a.m., came into collision, in a severe snowstorm, with that up-mail-train, due to leave Grantham at 4.14 a.m. One passenger was injured. The line is straight from the Burton signal-cabin, about a mile to the north of Corby, to the Corby station, and to the point of collision beyond it, and is worked upon the block-system. The up-mail-train had been brought to a stand 376 yards on the south of the centre of the passenger-platforms, and about 636 yards on the south of the home-signal at the Corby station, in consequence of the line having been obstructed by snow; and the up-express goods-train was following it at an interval of 23 minutes past the Burton cabin, and of 26 minutes past the Corby cabin. The signals were no doubt affected by the snow, which also prevented the signalmen at the Burton and Corby cabins from seeing their distant-signals; but if the engine-driver of the goods-train had kept his train under proper control after passing the Burton cabin, and over two detonating signals, which had been laid down to warn him, the collision might have been avoided. The engine-driver of the goods-train, with 35 loaded waggons and one break-van behind him, was in the wrong in proceeding (down a falling gradient of 1 in 178, on slippery rails) towards the Corby home-signal, and pushing his reversing-lever over into forward gear for that purpose after he had passed the Burton cabin home-signal at danger, or in a condition which he took to mean danger. The questions of signal apparatus and working with reference to severe snowstorms were receiving the anxious attention of the Company.

23rd December.—The 2.45 p.m. express-passenger-train from the King's-Cross station, London, for Manchester and Liverpool was, to meet the exigencies of the Christmas traffic, divided into two parts. The first part, consisting of an engine, a tender, 13 passenger-carriages, and two break-vans, was unusually heavy; the rails were in very bad condition; and, although the distant and home signals at the Arlesley-siding station were both at danger, the engine-driver not only failed to stop at the home-signal of that station, but his engine came, 283 yards beyond that home-signal, into violent collision with six waggons of a goods-train, three of which had, in shunting, been thrown off the rails, and which obstructed the down-main-line on which he was travelling. Three passengers were killed, and a fourth died afterwards from his injuries. The engine-driver and fireman, in jumping off their engine, were also killed, and 115 passengers and the guard were injured. The deceased engine-driver was running, under the circumstances, at an incautious speed. But there was an absence of adequate rules for carrying out the true principles of block-working. The obstruction-signal should, for instance, have been given to the next block-station before a goods-train was allowed to be shunted across the path of the express-passenger-train; and there was a great want of more efficient break-power throughout the express-train.

Great-Northern and Manchester-and-Sheffield-and-Lincolnshire.

6th April, 1876.—A Great-Northern loop-line down-passenger train from Grantham, through Lincoln, for Doncaster, came into collision with a Manchester-Sheffield-and-Lincolnshire passenger-train from Doncaster for Sheffield, travelling on the South-Yorkshire Railway, at the crossing of the Great-Northern down-main-line by the down-line of the South-Yorkshire Railway, near the south end of the Doncaster station-yard. Forty-seven passengers and six servants of the companies were injured. This collision resulted from faulty signal-arrangements at the south entrance of the Doncaster station-yard, but it would probably have been avoided if the Great-Northern passenger-train had been provided with continuous breaks.

Great-Northern of Ireland (Dublin-and-Antrim-Junction).

12th May.—As the 9.30 a.m. down-passenger-train from Lisburn, due at Antrim at 10.30 a.m., was approaching the loop points at the entrance to the Antrim-junction station, it came into collision with an engine shunting a train of empty vehicles which had arrived as a special train a short time previously. Six passengers were injured. The engine-driver of the down-passenger train failed to observe the Company's rule with regard to stopping dead at the distant-signal at the entrance of the Antrim-junction station. A cross-over road was required, near the platform, to prevent the necessity for fouling the single line with shunting trains.

Great-Western.

4th January, 1876.—A special goods-train came into collision, at the Tipton Junction, with 17 waggons, which had been kicked foul of the junction during shunting operations. The fireman of the special goods-train was killed and the driver injured. The engine, tender, and some of the waggons were thrown off the rails. The system of allowing waggons to be kicked up this incline in the dark at too high a rate of speed was dangerous and the Company ought to provide proper siding-accommodation and a catch-siding and stop-block.

13th February, 1876.—The express Irish-goods-train from Milford was run into, seven minutes after its arrival, by a ballast-train, at the Bridgend station. The engine-driver of the ballast-train had both his legs cut off, and afterwards died. The accident occurred on a Sunday, on which day the signalman on duty in No. 1 cabin was also required to work the up-home-signal at the Bridgend station. "Irregularities had crept in for some time past "at Bridgend." The practice of the signalmen was not similar in all cases. The down-line was being worked as a single-line, during the relaying of the up-line. The driver of the ballast-train approached the station at too high a rate of speed, considering the state of the rails, and knowing that the Irish-goods-train was in front of him; but the accident was caused by the neglect of the signalmen on duty at No. 1 and No. 2 cabins in not working their signals to protect the Irish-goods-train.

15th February, 1876.—A passenger-train came into collision with a dead-engine at the Taunton station under the following circumstances. A dead-engine, sent on the day in question from Taunton to Bristol, to be forwarded by the 10.55 a.m. Whiteball goods-train, due to leave Taunton at 12 o'clock, was standing in the shed on the western side of the station. The shunting-porter caused the shunting-engine, which had three trucks attached behind it, to be backed to the shed, and he coupled on the dead-engine to the rearmost of the three trucks, the hook of the coupling-chain of the engine being placed in the D shackle of the SD truck No. 145; but instead of coupling it on in the usual manner, with the hook dropped into the shackle, thus ∪, the hook was placed in the shackle sideways while it was in this position ⊃. This dead engine, No. 111, had a transverse iron bar, on which the coupling-chain travelled from side to side, in order that the engine might be used in the shunting both of broad and narrow gauge trucks. As soon as the dead-engine was coupled on to the last of the three trucks the shunting engine drew the trucks and the dead-engine out of the shed and engine-siding on to the down-main-line, and the engine-driver then proceeded to push these vehicles back by a cross-over-road to the up-main-line. While this was being done the dead-engine became disconnected from the third truck, the coupling-hook of the engine having dropped out of the D shackle of the truck, which was not set in its usual and proper position. The 11.0 a.m. train from Taunton to Chard, which consisted of an engine, seven trucks, and two passenger-carriages, had been drawn out of the dock line, at the eastern end of the station, and north side of the up-platform, on to the up-main-line, and was being backed along the up-main-line, to enable the engine to get opposite to the water-crane, for the purpose of taking water, when the driver of the shunting-engine, seeing that the Chard train was backing towards him, sounded the break-

whistle, and pulled up the engine and trucks. It was then seen that the dead engine had become uncoupled, and was running towards the carriages at the rear of the Chard train. Four passengers were injured as the result of the improper manner in which the dead-engine was coupled to the truck by the shunting-porter.

5th June.—A return excursion-train, 7.15 p.m., from London, came into collision, at the junction between the Great-Western and the South-Wales-Union Railways near Bristol, with a train of empty carriages, which after leaving its passengers at the Bristol station, was, whilst being crossed over from the down-line of the South-Wales-Union Railway to the sidings on the further side of the up-line of that railway, in its way on the Great-Western down-main-line. The engine of the excursion train was much damaged, one of its cylinders being broken off; and five carriages and a break-van with which it came into collision were also much damaged. One passenger and one servant of the Company were injured. The distant-signal, which was not interlocked with the points, had not been turned to danger to protect the shunting train. The signal-arrangements were in a transition state. At such a junction it was very desirable, in the interest of the public safety, that when the main-lines were obstructed by shunting operations, the block-system should be employed in addition to the ordinary signals for the protection of the traffic. But this precaution could not be carried out without re-arrangement of lines and sidings and increase of accommodation, which were much required.

14th August.—As the 9 a.m. narrow-gauge passenger-train from Swindon for Taunton was entering the Bristol station, it came into collision, at the passenger-platform, with eight broad-gauge carriages loaded with passengers, which were waiting for their engine to start as an excursion-train from Bristol for Weston-super-Mare. No vehicles in either train left the rails, and very little damage was done to the carriages, but 30 passengers were more or less injured. It was difficult to blame the engine-driver, considering the small amount of warning that was afforded to him, after receiving all-right signals, of the obstruction at the station. The restricted amount of accommodation for the formation of trains at the Bristol station necessitated the practice, which led to this accident, of running one train in behind another; and it was desirable that arriving-trains should under such circumstances be more effectively warned outside of the station; and that danger-signals should be kept up against them, instead of a green flag being merely held up, as on this occasion, by a ground-policeman.

21st September.—The 10 p.m. passenger-train from Hatton for Birmingham came into collision, at the Snow-Hill station, Birmingham,—the approach to which is through a tunnel,—with a train of empty carriages which was standing at the down-line platform. Two passengers complained of injury. The signalman in lowering the signals for the passenger-train forgot that the empty carriages were standing at the platform.

2nd October.—As the second part of the 3 p.m. express-up-passenger-train from Bristol for London was approaching the North-Somerset junction, Bristol, it came into collision with some narrow-gauge cattle-trucks which were being shunted back from the up-main-line into a siding. The engine-driver of the passenger-train neglected to observe the signals, which were at danger against him. It was constantly necessary, on the approach to this junction, to shunt goods and cattle trucks across the main-lines, running between the sidings. It was not consistent with safe and proper working that line-clear should be given to the next junction cabin, for an advancing express-train, within a quarter of a mile, or less, of such shunting operations. But it was not possible, in the working of the incessant traffic, to adopt proper precautions; and additional accommodation was urgently required.

Lancashire-and-Yorkshire.

8th February, 1876.—The 4.30 p.m. passenger-train from Liverpool for Normanton, due to leave Bolton at 6.5 p.m., came into collision, at the Bolton station, with a portion of the 9.25 a.m. goods-train from Entwistle for Bolton, due to reach the latter station at 10.55 a.m. No complaints of injury were received from any passengers, nor were any servants of the Company injured. The engine-driver of the passenger-train, misled by seeing the up-home junction-signal off for him, improperly ran past a home-signal at danger at a speed of six or seven miles an hour. There had been a general want of proper regard to this home-signal. The goods-train, seven hours late, was improperly shunted at the very time the passenger-train was due, and for this the Salford-line-cabin signalman and the guard of the goods-train were to blame. For the sake of saving a very few minutes in the time at which the servants with the goods-train might finish their day's work, this signalman and guard endangered the safety of the passenger-train. The signal and other arrangements at Bolton required and were to be remodelled. It was not right to allow a passenger-train to leave the platform while a train was shunting at the Salford-line-cabin.

25th April, 1876.—While the 4.50 p.m. express-passenger-train from Victoria station, Manchester, for Fleetwood, was standing at the down-home-signal at the Salford-station east-cabin, it was run into by an engine, towing a dead-engine, from Miles-Platting to Liverpool. 56 passengers complained of injury. The driver of this engine, anxious to get out of the way of a following express-passenger-train, and under the impression that the block-system was in force, approached the Salford-cabin, where the signals were against him, without sufficient caution; and he mistook the lowering of the home-signal, meant for the engine-driver of the express-train, as a signal for him to proceed. Land had been purchased for improving the accommodation and arrangements on this part of the line, and it would then be possible to introduce the block-system.

5th September.—A special goods-train, consisting of an engine and tender, six waggons, and a break-van, on its return journey from Low-Moor to Liverpool, came into collision with a train of empty carriages standing in a loop-line at the Halifax station. The driver and fireman were injured. There was considerable destruction of rolling-stock. The engine-driver of the goods-train, who had been on duty for 35½ hours out of the 42 hours previous to the collision, owing to the sickness of other drivers, and stated that he was misled by a fixed green-light in the tunnel, failed to obey the station signals, which were against him. The fireman was not acquainted with the road.

30th October.—The 3 p.m. cattle-train from Skipton for Salford came into collision, 70 yards outside the home-signal, and 165 yards from the point at which such an obstruction could first be seen, with the 6.45 p.m. passenger-train from Colne for Manchester, at the Brierfield station, near Burnley. Three butchers were killed and two injured in the cattle-train, and nine passengers and two servants of the Company were injured in the passenger-train. The Brierfield down-distant-signal showed all-right to the engine-driver of the passenger-train when it ought, according to the position of the lever in the locking-frame, to have been at "danger." The distant-signal wire had probably become jammed (as afterwards happened) between one of the pulleys, which was too small, and its frame. The distant-signal was out of the signalman's sight, and was not at the time connected with a repeater in his cabin. Further siding-accommodation was required at the station, to prevent so much obstruction to the main-line. If the block-system had been in operation the collision would have been prevented, and if there had been continuous breaks in the hands of the engine-driver its effects would have been mitigated.

London-and-North-Western.

13th January, 1876.—A coal-train from Watford came into collision at Tamworth at 11.12 p.m. with part of a mail-train from Stafford and Shrewsbury. Six post office clerks and one servant of the company injured. The driver and fireman of the coal-train neglected to keep a proper look-out, and they ran past the distant and home signals at danger. Both men had been on duty 19½ hours.

23rd February, 1876.—As the 5.25 p.m. passenger-train from Bolton was approaching the Atherton station it came into collision with a goods-train. Eleven passengers and a guard were injured. The passenger-train was wrongly allowed to leave Chequerbent, the station next to Atherton, whilst the goods-train was standing outside the home-signal at Atherton. The telegraphic signals should be in the hands of a special signalman in a detached cabin, and not in those of the station-master, who made this mistake. Continuous breaks in the hands of the driver might have mitigated the collision. They were much required on a line with such steep gradients.

August 16th.—Six passenger-carriages belonging to the Midland Railway Company, and intended to form a train for Derby, were, in shunting, driven back against seven other carriages, waiting in a siding to start as a London-and-North-Western train for Sutton-Coldfield, and the latter seven carriages were forced against the buffers at the end of the siding, at the New-street station, Birmingham. Two passengers who had got into the Midland carriages

and a person standing on the platform were injured. Eighteen Midland carriages, also attached to the pilot-engine, had been drawn out of the siding, after leaving the six Midland carriages in the siding, into the tunnel, and were to have been shunted back on to the main line; but in consequence of the six carriages having, in rebounding from the siding, fouled the junction, the points were opened for the siding, and the driver was ordered to push the carriages back. The driver, under the impression that he was going to the main-line, did not push his 18 carriages back so slowly as was necessary. The accident was mainly due to the insufficient amount of accommodation at the station. The shunter should have informed the engine-driver precisely as to what was required of him, instead of only giving the ordinary signal of two beats on a gong to call him back. A third signal of three beats was afterwards employed to indicate "come back gently."

26th September.—On the arrival at Acton-bridge of a goods-train from Northwich, the waggons and van were put into a down-line siding, and the engine was taken across to the sidings on the up side, to fetch out a waggon of fruit, which was placed in its rear. An up coal-train from Warrington came into collision with this shunting engine at a speed of six or seven miles an hour, and the engine-driver was thrown off and the fireman jumped off the shunting engine. This engine, with its tender and the fruit-waggon, now in front of it, having thus been set in motion, ran away over the cross-over-road and along the up-line, with its regulator open, towards Hartford. It passed Hartford station at great speed, and overtook an express goods-train from Liverpool for London, about three-quarters of a mile to the south of that station, on a falling gradient of 1 in 330, at a speed of 20 miles an hour. The waggon of fruit was broken to pieces, and the tender was damaged. The guard and two drovers travelling in the break-van of the express-goods-train were injured. The engine-driver of the up-coal-train, who overran both the distant and home signals at Acton-Bridge, met the engine attached to the fruit-waggon 165 yards inside the home-signal.

September 29th.—The 12 o'clock (noon) up-passenger-train from Leeds for Marsden came into collision at Ward's siding, near Churwell, on the Manchester-and-Leeds section, with the 11.35 a.m. up-goods-train from Copley-Hill (Leeds) for Liverpool. Four passengers and two servants of the Company complained of injury. One of the signalmen acknowledged a signal from the Farnley Junction, which he should not have done, while his needle was blocked to "train-on-line." The driver of the passenger-train was misled by seeing the distant-signal lowered, but he might perhaps, if he had paid more attention to the home-signal, which was at danger, have stopped, with a comparatively light train, on rising gradients of 1 n 140 and 1 in 160, in a less distance than 520 yards. With continuous breaks he could of course have stopped in a much shorter distance. The up-distant signal at Ward's siding required to be provided with a repeater, and the signalman ought to have kept it habitually at danger. The lever for working it was intended to place the Farnley Junction up-home signal at danger, but the apparatus was from disuse in bad working order.

10th October.—The 11.45 p.m. excursion-train from Euston for Wolverhampton came into collision with a goods-train at the Bletchley station. Forty passengers and one servant of the Company were injured. The engine-driver of the goods-train had, in obedience to the fixed signals, brought his train to a stand close to but outside of the down-home-slow-line signal; and, after having stood there for five minutes, he received (as he believed) a green ground-light from the signal-cabin, to allow him to proceed into the Bletchley station-yard. He therefore drew ahead, fouled the down-fast-line, and thus got in the way of the excursion-train. The arrangements for working the excursion traffic were faulty, and the use of hand signals ought not to be allowed.

21st December.—The 4.50 p.m. express-train from Wigan for Liverpool, running 34 minutes late, came into collision with the preceding 5.5 p.m. stopping-train, also from Wigan for Liverpool, which was drawn up outside the up-home signal at the St. Helen's station, while another train from Rainford for Ditton was detaching and attaching vehicles at the station. Eight passengers complained of injury. The engine-driver of the express-train, though aware, from the signals shown him at Gerrard's-Bridge that the line was not clear into the St. Helen's station, was approaching that station at too high a speed to enable him to stop his train in the distance of 180 yards, at which distance it was possible for the van lights of the preceding train to be seen. He was, no doubt, calculating on having to stop at the home-signal, 165 yards beyond the point at which the collision occurred. Continuous-breaks in the hands of the engine-driver would, no doubt, have enabled him to stop the train in time to avoid the collision.

23rd December.—As the 1.45 p.m. passenger-train from Oxenholme for Windermere was approaching the Burneside station, it came into collision with the preceding 2 p.m. goods-train from Kendal for Windermere, which was engaged in shunting at the station. Four passengers were injured. The distant-signal, which was the only signal of warning between the engine-driver of the passenger-train and the shunting goods-train, was not working as well as it ought to have done; and its semaphore-arm was not in the position of danger. The engine-driver, in accordance with his instructions, should, on finding the arm in a doubtful position, have treated it as a danger-signal, and have exercised more caution in approaching the station. The distant-signal required to be removed to a position further from the station, from which it could be better seen. When the block-system should happily be introduced, a train would not be allowed to approach the station while such shunting was being performed.

London-and-South-Western.

25th February, 1876. — As the 8.30 p.m. passenger-train from Windsor was passing the Nine-Elms goods-yard at a speed of about 30 miles an hour, the engine came into collision with a goods-truck which had fallen in its way on the main-line, after having been thrown off a shunting line of the Nine-Elms-Yard, running parallel to the main lines. Three passengers were injured. The distance between the siding and the main-line was only from 5 ft. 9½ in. to 5 ft. 11 in., whereas it was desirable that a width of 10 to 12 feet should be allowed. Arrangements were being made for diverting the passenger-lines and increasing the accommodation in the Nine-Elms goods-yard. Meanwhile a special signalman was required by day and by night to secure the safety of the traffic.

13th November 1876.—The 6.5 p.m. passenger-train from Hounslow for the Waterloo station, London, travelling at a speed of about 30 miles an hour, came into collision in passing the Nine-Elms goods-yard with a goods-truck. One passenger and a guard were hurt. The truck had (as in the previous case) been thrown in shunting from a siding into the way of the train, on the up-Windsor-line, parallel to the siding, and less than six feet from it. A ground signalman, stationed to secure safety at this spot, had been working the points of a cross-over-road for fly-shunting, and the truck had during this operation been thrown foul of the main-line. This was the second accident of the same description at the same spot. The passenger-lines were being diverted, and improved arrangements were being carried out.

London-Brighton-and-South-Coast.

29th January, 1876.—As the 5.35 p.m. passenger-train from Victoria for West-Croydon was leaving the Victoria station it came into collision, in a dense fog, with the engine of an empty-carriage-train which was being drawn into the station in the opposite direction on the same line. Twenty-one passengers complained of injury. There was a misunderstanding on the part of the two signalmen in the Victoria-junction and the Eccleston-Bridge cabins, which would not have occurred if the points and signals had been so interlocked as to render it impossible for them to combine in lowering conflicting signals and setting the points so as to admit of such a collision. But the provision of further accommodation for the working of the traffic in and out of this station, and for the shunting operations now performed on the main lines, was a still more important question.

23rd December.—As the 5.33 p.m. passenger-train from London-Bridge, viâ the Crystal Palace, for Victoria, was entering No. 2. platform line at the Victoria station, it came into collision with an engine which was standing at the starting-signal of that platform-line, waiting to proceed to the locomotive-sheds at Battersea. Three passengers complained of injury. The signalman at the Eccleston-Bridge cabin, after letting out one train from No. 2 platform-line at 6.32, forgot that the engine which had brought it into the station would, in following it out, on its way to Battersea, be waiting at the starting-signal; and allowed a second train to enter the same platform-line and to come into collision, about 10 minutes later, with the engine so waiting at the starting-signal. There was some excuse for the signalman, in the state of the atmosphere, and the irregularity of the traffic on the Saturday before Christmas Day. It was difficult, in the condition of the station, to

devise a remedy by which such a mistake might be avoided. But the question of extending the station and improving the accommodation was a difficult one, involving a heavy outlay.

Manchester-Sheffield-and-Lincolnshire.

18th February, 1876.—The 6.25 p.m. passenger-train from Manchester for Retford ran into a light-engine which was standing at the west end of the Ashbury station. Five passengers were injured. The engine-driver of the passenger-train mistook for his own the signals for a Midland train at the station, which was about to travel on a different line of rails, and he did not notice the light-engine until he was within 50 yards of it.

11th April, 1876.—The 3.55 p.m. passenger-train from Peniston for Grimsby came into collision with the 3 p.m. coal-train from Mexborough for Grimsby, 176 yards within the distant-signal at the Appleby station. Two passengers were injured. The engine-driver of the passenger-train was travelling at too high a rate of speed down an incline of 1 in 95, and had not—with one break-van for eight vehicles—sufficient break-power to control his train. The distant-signal was at danger against him. This portion of the line ought to be worked on the block-system. The Company was making slow progress in the introduction of that system.

Midland.

26th February, 1876 (Staveley-Coal-and-Iron Company's Railway).—An engine proceeding from the furnace-yard of the Staveley Company to the black-shale sidings, for the purpose of fetching a waggon of iron ore, was allowed to run beyond the point at which it ought to have been stopped, and came into collision with some empty waggons standing in the siding. Two shunting guards were killed, and the fireman was severely injured. The engine, belonging to the Midland Railway Company, was at the time of the accident in the hands of the fireman, whilst the driver was at his dinner. On the way to fetch the waggon of iron ore the gauge-glass of the engine broke, and the fireman, occupied in attending to it, did not take steps sufficiently soon for stopping the engine. There was great pressure on these men to supply coal for the furnaces, or fetch waggons, but they had both been warned previously as to not working the engine singly. It was necessary to maintain discipline.

1st March, 1876.—As the 10.55 a.m. passenger-train from Bradford for Leeds was approaching the Kirkstall station it came into collision with the waggons of a ballast-train which was being shunted back out of its way from the up to the down line at the entrance to that station. Three waggons of the ballast-train were thrown off the rails. Three passengers were injured. The line was worked professedly on the block-system, but the interval of space, which it was the object of the block-system to ensure between one train and another, was reduced to 15 yards. As long as this mode of working the block-system was in force collisions must be expected, especially when, as in this instance, continuous breaks were not employed.

19th June.—As the 10.25 a.m. passenger-train from Derby for Leeds was starting from the Sheffield station it came into collision with the 11.30 a.m. passenger-train from Rotherham for Sheffield, which was at the same time entering the Sheffield station. Thirty passengers were injured. The engine-driver of the Leeds train, whilst oiling his engine, allowed the fireman to start it from a state of rest; and they neither of them looked at the starting-signal, which was conspicuous, and at danger, or saw the in-coming train until it was too late to avoid the collision.

September 5th.—An express-goods-train from London for Wellingborough came into collision at Bedford with a train of empty waggons. The guard of the goods-train was injured. The signals were against the express-goods-train. The engine-driver admitted that he and his fireman had been "napping." The collision occurred at 5 a.m., and he had come on duty at 4 p.m. on the previous day, and he would have to proceed on his journey 15 miles further. He and his fireman had been dismissed from the Company's service.

Monmouthshire.

19th December.—A London-and-North-Western passenger-train from the Sirhowy Railway came into collision with a Monmouthshire Railway Company's coal-train at the Bassalleg station. Six passengers and the guard were injured. The coal-train had been stopped at the station by the home-signal; but the distant-signal, which was not working properly, was not at danger against the passenger-train; and the engine-driver did not expect to be stopped until he reached the platform. He might, however, have seen the tail-lights of the coal-train, and as his train was provided with Fay's continuous breaks, he might, if he had been travelling at moderate speed, and had kept a better look-out, have stopped his train in time to prevent the collision. A new locking-frame and improved signals were required.

North-British.

28th September.—The 10 a.m. down-passenger-train from York for Edinburgh came into collision, 77 yards inside the down-home-signal of the Calton tunnel-cabin, near the Waverley station, Edinburgh, with the 3 p.m. passenger-train from Musselborough for Edinburgh. Nineteen passengers were injured. There was a want of caution on the part of the driver of the York train, a North-Eastern Company's servant, in passing the Calton-tunnel home-signal, which was against him. But this signal, only 80 yards on the west of the mouth of the tunnel, was not efficient. The gradient, rising 1 in 78, was much in his favour, and if he had been provided with a powerful engine-break, or with continuous breaks on his train, he would have been able to avoid the collision. Improvement at the Waverley station was much required, to enable the block-system to be carried out.

20th December.—The 4.28 p.m. down-coal-train from Thornton junction for Dunfermline, due to stop at Cowdenbeath station, on the Fifeshire lines, at 7.45 p.m., was, while shunting, run into by the 7.45 p.m. up-goods-train from Dunfermline for Thornton, due to stop at Cowdenbeath at 8.5 p.m. Four servants of the Company were injured. An experienced porter neglected to turn the up-distant-signal at the Cowdenbeath station to danger before he allowed the down-coal-train to cross the up-line. This mistake could not have been made if the points and signals at this station had been interlocked. Nor could the collision have occurred if the block-telegraph system had been in force.

North-Eastern.

28th September.—As the Scarborough mail-train, 4.20 a.m. from York, was running out of the York station, it came into collision with some empty carriages which were being backed into the station to be formed into an excursion train. Four passengers and a guard were injured. There was a misunderstanding between the engine-driver of the train of empty carriages and the signalman as to the line on to which the empty carriages should be set back into the station. As the extensive alterations and improvements at the York station were fast approaching completion, it was needless to recommend any important changes in the arrangements under which the collision occurred.

North-London.

28th July.—The 3.40 p.m. passenger-train from the Broad-Street station for the Mansion-House, came into collision, at the New-Inn-Yard Cabin, 480 yards from the Broad-Street station, with the 2.42 p.m. up-goods-train from Camden for Broad-Street, whilst the latter train was crossing the down-main-line, on which the former train was travelling. Three of the waggons of the goods-train were thrown off the rails, and four were more or less damaged. Neither the engine nor any of the carriages of the passenger-train left the rails, but the buffer-beam, smoke-box, condensing-pipes, tank and life-guards of the engine were more or less damaged. No passengers complained of injury, though it appears that 50 people were riding in the passenger-train. The engine-driver of the passenger-train did not observe that the home-signal was against him. The distant-signal was not at danger, in accordance with the rules adopted on the North-London Railway with regard to junctions. The signals were in a transition state. The signal-man at the New-Inn-Yard Cabin did not obey his rules, in allowing the goods-train to cross to the down-main-line before he had blocked back against the passenger-train. Improved arrangements, then in progress and afterwards made, would prevent such a collision from again occurring.

North-Staffordshire.

17th August.—The 6.35 p.m. passenger-train from Derby for Crewe came into collision with a goods-train which was being shunted at the Crewe sidings by a London-and-North-Western engine, about half-a-mile to the east of

the Crewe station. Five passengers and the guard of the passenger-train were injured. The engine-driver of the passenger-train, who had been driving for 28 years without a previous mishap, was misled by a signal which was out of order.

NORTH-UNION (LONDON-AND-NORTH-WESTERN, AND LANCASHIRE-AND-YORKSHIRE, JOINT).

25th January, 1876.—Some loaded London-and-North-Western coal-waggons, which had just been brought out of a siding on to the down-main-line at the Farington station, 2½ miles south of Preston, were run into by the London-and-North-Western Windermere express-passenger-train, due to leave Manchester at 3.55 p.m., and not timed to stop at Farington. Nine passengers complained of injury, and the engine-driver and fireman were severely injured in jumping from their engine. The collision occurred about 36 yards outside the down-home-signal, the driver of the express-train having passed the distant-signal at danger at a high speed. The regulations specially mentioned Farington as a station at which it was not necessary to block back whilst shunting was being done on the main line, unless during foggy weather or snowstorms. There was no tail-light on the coal-waggons. The shunting was permitted to proceed, in accordance with the regulations, when two passenger-trains were overdue, and with line-clear given back to the next block-station, Bashall sidings, only one mile distant. In order to prevent such collisions, the block-system should be properly worked, by blocking back before the main-line was allowed to be obstructed, especially in the face of express-passenger-trains; strict discipline should be enforced as regards obedience to signals; and a larger proportion of break-power should be employed.

OLDHAM-ASHTON-UNDER-LYNE-AND-GUIDE-BRIDGE-JUNCTION.

5th April, 1876.—As the 10 a.m. goods-train from Guide-Bridge to Oldham was ascending a steep incline of 1 in 86, on the approach to the Oldham (Clegg-Street) station), at a speed of about 10 miles an hour the engine-driver found the distant-signal at danger. He whistled, and it was taken off, but his train was shortly afterwards overtaken and run into by the 11.35 a.m. passenger-train from Manchester. Five passengers and one servant of the company were injured. The engine-driver of the passenger-train saw the distant-signal lowered before he noticed the goods-train in front of him, and was thus misled. Continuous breaks on the passenger-train would probably have prevented the collision. The block-system was much required, and considerable progress had been made with the arrangements necessary for its introduction.

21st August.—A London-and-North-Western train, 7.20 p.m. from Stockport for London, from which a carriage had just been detached, was run into, whilst standing at the Clegg-street (Oldham) station, by a Manchester-Sheffield-and-Lincolnshire train from Manchester. Nine passengers were injured in the former Company's train. The approach to the station is on a curve, and through two over-bridges and a covered-way; and the engine-driver of the latter train could not see the former train, which was standing on the incline of 1 in 86 approaching the station, detached from its engine and retained by the guard's break. The signalman at the south junction allowed the Manchester-Sheffield-and-Lincolnshire train to pass in consequence of a mistake in regard to a hand-signal temporarily employed pending alterations. The line between the south junction and that station was shortly to be worked, when the signal-arrangements had been improved, on the block system, which would prevent such collisions from occurring.

SOUTH-EASTERN.

29th July.—The 9.8 p.m. passenger-train from Ashford to Hastings overran the point at which it ought to have stopped, and came into violent collision, 170 yards beyond that point, with an empty train belonging to the London,-Brighton,-and-South-Coast Company, which train was being shunted into a siding at the west end of the Hastings station. Seventeen passengers complained of injury. The guard of the Ashford train and the fireman of the Brighton Company's train were also injured. Both engines were more or less damaged, and three carriages in the Brighton Company's train broken up. The collision was caused by a want of judgment on the part of the driver in entering upon the descending gradient of 1 in 60, by which the Hastings station is approached, at too great a speed, owing to which (and to the reversing lever slipping forward) he lost control of his train. Considering the nature of the approach to Hastings from Ashford, with the existing arrangements, no train should be allowed to leave Winchelsea for Hastings until the line is clear, so that in case of a driver overrunning there should be no fear of a collision. Continuous breaks in the hands of the engine-driver would in all probability have enabled him to avoid the collision.

SUMMARY.—CLASS F.

The 49 investigated accidents in this class,—of collisions within fixed signals, at stations and sidings,—caused the death of 20 passengers and 6 servants of Companies, and injury to 561 passengers and 41 servants of Companies. This is, as usual, by far the most formidable class, containing 34 per cent. of the 149 investigated train-accidents, and accounting for more than half of the passengers killed and injured in such accidents.

There were 41 cases of negligence or mistake on the part of officers or servants; 16 cases of defective system for securing intervals between trains or want of block-telegraph-working; 17 cases of defective arrangements of signals or points, or want of locking-apparatus or safety-points; 7 cases of insufficient or inadequately enforced regulations; 16 cases of insufficient accommodation in lines or sidings; 15 cases of inadequate break-power; 2 cases of foggy weather; and 3 cases of insufficient establishment, or too long hours of duty.

Twenty Companies were concerned in the 49 accidents, the Belfast-and-Northern-Counties, the London-Chatham-and-Dover, the Glasgow-and-South-Western, the Metropolitan, the Metropolitan-District, and some other Companies, forming exceptions. 23 out of the 49 occurred on the systems of 4 Companies, namely, 8 on the London-and-North-Western, 7 on the Great-Western, 4 on the Lancashire-and-Yorkshire, and 4 on the Midland.

The most remarkable accident in this class was that at Abbotts Ripton, on the Great-Northern Railway, the causes of which are fully recapitulated in the above précis.

As in the former class the observations of Captain Tyler on the accidents of this class of the preceding year are so remarkably applicable to the accidents of this class of the present year, that they may be here quoted with advantage; namely, "that the remedies "mainly required for reducing the numbers of collisions in this large class are those "which have been so frequently enumerated. The same conditions are constantly

" recurring. For the want of extra lines or sidings, or of better arrangements, goods " or mineral trains are shunted on passenger-lines, and too frequently when passenger- " trains are due. The rails are slippery, or the view is obstructed, or the signal-arrange- " ments are inefficient, or a signal acts imperfectly, or the guards do not hear the break- " whistle from the engine. The engine-driver is not as cautious as he ought to be. " He is accustomed to pass the distant-signal at speed, and does not expect to find " the obstruction so near to it. He miscalculates his ability to stop his train. A " collision is the result. Even when a system of block-working is in force, the signalman " is allowed to give line-clear as soon as a train has passed within his home-signal, or is " not required to block back to the next cabin when an obstruction occurs or is created " at or near his home-signal, and the interval of space which it is the object of the " block-system to preserve is thus reduced, either to the thickness of the signal-post, " or to a few yards beyond it. As railway working is improved in these respects, by " the provision of sufficient lines and sidings, by proper signal and point arrangements " and interlocking, by efficient block-working in the hands of responsible signalmen, " under good regulations strictly adhered to, with *continuous-breaks* in the hands of " the engine-drivers, to enable them to stop their trains without fail, without being " dependent upon the attention or assistance of the guards, and within reasonable dis- " tances, it is to be hoped that the collisions in this important class will be materially " diminished in number, and will be attended with less serious consequences."

G.—*Collisions between Engines or Trains meeting in opposite directions.*

Belfast-and-Northern-Counties.

26th December.—A passenger-train from Cookstown, due to leave Antrim at 10.5 a.m., was proceeding along the single-line, about a mile beyond that station, towards Dunadry, when it came into collision with a special-goods-train from Belfast, which was late, but had been timed to meet and cross it at Antrim. One passenger was killed, and eight passengers and five servants of the Company were injured. The station-master at Antrim, and the engine-driver and guard of the passenger-train, all forgot the arrangements which had been made for the special-goods-train to cross the passenger-train at Antrim. This was an illustration of the necessity for working trains on single lines by the train-staff or some such system.

Midland and South-Western (Somerset-and-Dorset-Joint).

7th August.—A down-special-train from Bath for Radstock, and an up relief-train running special from Bournemouth for Bath, came into collision with one another whilst travelling in opposite directions on the single line between Wellow and Foxcote. Twelve passengers and a guard were killed and twenty-eight passengers and six servants of the Company were injured.

In considering the circumstances which led to this collision, the following defects of regulations and of working were brought to light:—

1. The Foxcote cabin, between Radstock and Wellow, was employed under regulations which did not contemplate or provide for such a cabin being interposed between two crossing-stations, and in a manner to constitute a breach of the undertaking given under seal of the Company to the Board of Trade, to the effect that only one engine in steam, or two or more engines coupled together, should be allowed to be between Radstock and Wellow at the same time.

2. The signalman in that cabin was comparatively inexperienced, was quite unable to use the speaking-instruments supplied in the cabin, and was almost unprovided with oil, so that he could not light the lamp of his distant-signal towards Wellow.

3. The responsibility for the safe working of the single-line was in a great measure, and too often solely, intrusted at Wellow to a boy 15 years of age, paid 7*s.* 6*d.* a week, and working ordinarily 14 hours a day, employed to book the passengers, collect the tickets, and attend to the accounts; and this boy had been on the 7th August in sole charge of the instruments from 6.30 a.m. to 11.15 p.m. while the station-master was absent, and thus on duty upwards of 15¼ hours when the collision occurred.

4. The system of signalling on the block-instruments prescribed in the regulations had been habitually neglected between Radstock and Midsomer-Norton, and had not been regularly attended to at Wellow and certain other stations.

5. The train-advice-book employed by the crossing-agent for arranging the crossing-places of the trains, and relied upon by him for that purpose, did not contain columns for entries from Radstock, or from some other stations.

6. When orders were given for running the up-relief-train, no time-table was drawn up for it by the superintendent; instructions were not, in the absence of any time-bill for it, forwarded to the different station-masters as to when they might expect it; and, although the crossing-agent had informed the various stations of the time named for it to start from Wimborne, and had arranged for its crossings at Bailey-Gate and Templecombe, he allowed it without any special notice to cross No. 18 down-train at Shepton-Mallet, and he did not take sufficient precautions to inform himself of its running, and thus to ascertain when it was likely to reach Radstock.

7. The crossing-agent checked in an improper manner messages which it was attempted to forward to him from Radstock, one at 10.39 p.m., and a second at or after 10.55 p.m., the latter of which would have informed him of the approach of the up-special-train from Midsomer-Norton towards Radstock, and of the immediate necessity of arranging a crossing between that train and the down-Bath-train.

8. The up-relief-train was allowed to cross six trains at different stations, but the engine-driver had received only one instruction and no regular crossing-order.

9. The station-master and telegraph-clerk at Wellow allowed the down-Bath-train to leave Wellow without any notice to Foxcote, and without its being taken on block from Foxcote.

10. They received the usual signals, and accepted the up-special train from Foxcote, some five or six minutes later, and before the down-Bath-train had time to reach Foxcote; whereas they knew that the latter ought, when once started from Wellow, to have had time to reach Radstock before the former left Radstock.

11. The station-master at Radstock allowed the up-relief-train to leave that station for Foxcote without any crossing-order or instructions from the crossing-agent, placing too much reliance on the previous assurance from the crossing-agent that he would arrange the crossings, and not sufficiently persisting in the attempt, in which his telegraph-clerk had twice been improperly stopped, to communicate with the crossing-agent.

12. The engine-drivers of these two trains, not knowing how other trains were running, and not having been accustomed strictly to obey the regulations as to crossing-orders or telegraph-passes, did not ask for either before leaving Wellow in the one direction or Radstock in the other.

13. There were on the Bath circuit too many telegraph-speaking-instruments on one line to admit of the regulations being properly carried out as to the free telegraphing of trains.

Summary.—Class G.

The 2 investigated collisions in this class,—on single lines, between trains meeting in opposite directions,—occasioned the death of 13 passengers and 1 servant of a Company, and injury to 36 passengers and 11 servants of Companies. In one case there was negligence or mistake of officers or servants; but in the same case there were insufficient establishment, inexperienced servants, and too long hours of duty. In both cases there were insufficient or inadequately enforced regulations. They were both instances of mistakes in telegraph-working and of the want of the train-staff system for securing safety on single-lines of railway. The serious collision near Radstock, as above detailed, disclosed a mode of working a single-line under conditions which could not be expected to secure safety.

H.—*Collisions at Level-Crossings of two Railways.*

Preston-and-Wyre.

17th March, 1876.—The London-and-North-Western 9.30 p.m. passenger-train from Preston for Lancaster came into collision with some waggons standing across the main line of the Wyre Railway level-crossing, which formed part of a Lancashire-and-Yorkshire Company's special-goods-train from Kirkham for the Maudlands goods-station. No person was injured. An inexperienced signalman at this crossing did not take sufficient precaution to ascertain that the shunting goods-train was clear of the Wyre level-crossing before he lowered his signals for the passenger-train. If the engine-driver of the passenger-train had used his continuous-break when he saw the home-signal thrown up to danger he might have avoided the collision. "His "having omitted to do so raises the question as to whether "the London-and-North-Western company are wise in "restricting their drivers use of continuous-breaks to the "first stop after starting and to emergencies." Various improvements of construction and signal-arrangements were required for the prevention of such collisions.

Summary.—Class H.

The only investigated accident in this class,—of collisions at level-crossings by two railways,—was attended with no personal injury. It was caused by want of caution on the part of an engine-driver, under a defective system of working with inefficient signal-arrangements. It raised the question as to whether the system of *continuous-breaks* on the London-and-North-Western Railway was an efficient one.

I.—*Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points.*

Belfast-and-Northern-Counties.

2nd October.—As the 7.30 down-passenger-train from Belfast for Ballymena was running through the loop-line facing-points, 500 yards from the signal-cabin, at the up-end of the Cookstown-junction station, the engine, tender, and two carriages, of which it was composed, left the rails. No person was injured. The facing-points were half open when the engine reached them, although the distant and home signals were right for the driver to enter the station. The point-indicator showed a white light, through the smaller back, instead of through the front opening. An up-goods-train had, in passing through the points in a trailing direction before the down-passenger-train arrived, forced the indicator into the position in which it was afterwards found. The facing-points were wire-locked. This was another instance, showing that wire-locking was not to be depended on, in consequence of the liability of the apparatus to be out of adjustment; and of the necessity of employing a man in such a case to see that the points were right before each train passed through them.

Cambrian.

12th December.—As the engine of a passenger-train from Machynlleth to Pwllheli was passing through a pair of facing-points at the Towyn station it left the rails. No person was injured. The engine-driver did not pay attention to the distant-signal, which was against him. The points were worked from the ground by a lever opposite to them, and 393 yards from the collected levers at the station. They were wire-locked with the signals.

Great-Eastern.

4th March, 1876.—As the 10.55 passenger-train from Fenchurch-Street was entering the North-Woolwich station the engine and three of the carriages passed in the proper direction through a pair of three-throw points, but the other carriages were turned in a wrong direction along the middle line. One person was injured. The single connecting-rod by means of which only the tongues of the three-throw points were held together failed to perform its duty in consequence of the screw at one end of it having been worn out. Double connecting-rods were required.

19th November, 1876.—The 3.55 p.m. passenger-train from the Victoria-Park station for Stratford-Bridge was passing through a pair of facing-points on the east of the Victoria-Park station when the passenger-carriage at the tail of the train left the rails. This carriage was dragged for a distance of 194 yards, until it reached a crossing, where the wheels were again forced on to the rails. The engine-driver and guard of the train were not aware of the accident till their arrival at the next station. Three passengers were injured. The signalman made a not unnatural mistake in working his point-lever prematurely whilst the tail of the train was passing the facing-points, which were 213 yards from him, were out of his sight on a curve, and were not provided with a locking-bar. It was proposed to bring the facing-points nearer to the cabin and to provide them with a locking-bar and bolt.

Great-Southern-and-Western of Ireland.

24th April.—As the 5 p.m. passenger-train from Tralee for Cork was approaching the Killarney Junction, the off-leading-wheel of the engine mounted on the off side, and, taking the train with it, left the rails at the facing-points at which the single branch-line (from Tralee) diverges into a double line before joining the main line. The engine broke away from the train and turned over on its side, and the driver was killed by its falling on him. The fireman was scalded and severely shaken. The accident was attributed to high speed round a sharp and irregular curve, and to the variation and a tightness of the gauge, and to the off tongue of the points having been slightly open. The curve and the points required improve-

ment, with check-rails round the curve, and a locking-bar and bolt at the points.

GREAT-WESTERN.

3rd June.—As the 8.10 a.m. narrow-gauge passenger-train from Swindon for London, due at Slough at 11.5 a.m., was passing through a pair of facing-points leading from the up-main-line on the north to the platform-line on the south, at the Slough station, the engine left the rails. The train was brought to a stand in 81 yards, and it was then found that the engine and tender, a break-van, and a passenger-carriage were off the rails with all their wheels. No person was injured. The flange of the off-leading-wheel of the engine mounted the rail of a moveable tongue, and the flange of the near-leading-wheel passed the wrong side of a fixed point; and the accident was thus caused by defects of principle and construction in the permanent-way. The most satisfactory remedy for the state of things at Slough would be its conversion from a one-sided to a two-sided station.

2nd July.—The 3 a.m. narrow-gauge goods-train from Bristol for Salisbury, consisting of an engine and tender, 34 waggons and a break-van, was about to turn off at Bathampton from the main-line, which is straight, and to enter upon the branch-line to the right, leading to Bradford and Trowbridge, on a curve of about 720 feet radius, when the off wheels of the engine mounted a single moveable switch at the off side, which was properly set and locked for directing the train on to the branch line. This moveable switch was the only check-rail against the inner flanges of the off wheels of the engine and other vehicles, to prevent them from travelling straight forward, and to cause them to travel round the curve to the right; but the off wheels mounted, and ran along the top of it, while the near wheels either struck or passed on the wrong side of the fixed point, inside the near rail, and then left the rails altogether. The engine came to a stand in the six-feet space between the up-and-main-down-lines, about 120 yards from the junction points.

The accident was similar in every respect to that which occurred at the same place on the 11th June 1875. The train was running at too high a speed, through a junction, faulty in its principle of construction, in only having a moveable switch to guide the flanges of the off wheels of the vehicles of the branch-line down-trains for a length of about nine feet; while the near wheels of the same vehicles travelled for the same distance, with the flanges of these wheels only resting on a nearly level iron bed. This peculiar construction, not made use of on narrow-gauge railways, is frequently used on the Great Western Railway where the permanent-way is mixed for broad and narrow-gauge trains. It is unnecessary at junctions, as it is quite possible to supply moveable switches for each pair of rails, and these switches can be set right for the main-line or branch-line, as the case may be, and be locked right as is done at sundry places between Bristol and Swindon.

4th September.—As the 4.40 a.m. narrow-gauge passenger-train from Yeovil for Durston and Taunton was approaching the Durston station on the Bristol and Exeter section it passed in the wrong direction through a pair of facing-points about 300 yards on the west of that station; and, running into a siding, it came into collision with some waggons which were standing in that siding. Five waggons were damaged to the estimated extent of 15*l*. The accident was occasioned by the mistake of a porter who forgot to replace these facing-points in their proper position after having shunted two trucks into the siding, and by the failure of the apparatus in the signal-cabin which was intended specially to provide against such a mistake. The rocking-shaft in the signal-cabin was not strong enough to resist the strains brought to bear upon it, with a lever at one end of it, and nearly 300 yards of rods connected with two locking-bolts and one locking-bar at the other end of it. Cranks would be less liable to fail.

GREAT-WESTERN (LAUNCESTON-AND-SOUTH-DEVON).

9th February, 1876.—The 8.20 a.m. passenger-train from Plymouth to Launceston was entering the Tavistock station when the engine mounted at a pair of facing-points, left the rails, and dragged two carriages off the rails. Three passengers were injured. The lever for working the facing-points had not, apparently, been pinned over. The Tavistock station was undergoing extensive alterations to accommodate the traffic of the London-and-South-Western railway, and the levers for working the points and signals had not been concentrated and interlocked with each other, or the accident would not have occurred.

LANCASHIRE-AND-YORKSHIRE.

22nd March, 1876.—As a ballast-train for Heckmondwike was passing over a pair of safety-points applying to a goods and mineral line at Ovenden junction, on the west side of the Halifax station, the break-van, in which 30 men were riding, left the rails. A ballast-man was killed and four others were injured. The train, which had been stopped by the junction signals, was signalled forward by hand by the signalman at the junction, who neglected before doing so to pull over the signal-lever which would have locked the safety-points in their proper position.

1st May, 1876.—The 1 p.m. down-passenger-train from Brighouse to Halifax came into collision with the engine of a ballast-train at the Halifax station. Nineteen passengers complained of injury. The signalman on duty neglected to set a pair of facing-points on the down-main-line in the proper direction before he took off the signals for the passenger-train to enter the station, so that when this down-passenger-train reached the facing-points it was diverted from the down-main-line to the down-platform-line, and was turned across to the up-main-line, where it came in contact with the engine of the ballast-train. The same man, described as one of the best signalmen on the station, had made the same mistake a week before. He could not have made such mistakes if the points had been interlocked with the signals.

2nd September.—A return-excursion-train, from Blackpool for Ewood-Bridge and back, came to a stand with 13 vehicles in front of and 13 vehicles behind the facing-points at the Blackburn junction, Accrington; and five carriages and the front wheels of a sixth carriage left the rails when the train was again started, in consequence of an act of forgetfulness on the part of the signalman, who shifted the facing-points while the train was standing over them. Seven passengers complained of injury. A locking-bar, which would have prevented the signalman from making such a mistake, was much required at this important junction.

LONDON-AND-NORTH-WESTERN.

28th January, 1876.—A bank-engine, which was following the 9 p.m. express-passenger-train from London for the north to assist it up the Shap-Fell incline, came into collision with it on its engine becoming disabled in consequence of the fracture of a coupling rod. 11 passengers were injured, one of whom afterwards died. It was a dangerous practice to allow an engine thus to follow a train and overtake it at a speed of 35 miles an hour, especially when, by night, owing to a curve and cutting, the driver of the engine could not see the tail-lamps of the train for more than 135 yards.

10th June.—As the 2.5 p.m. local passenger-train from Stockport for Manchester was being shunted at the Heaton-Norris station out of the way of an express-train, it was turned into the wrong siding, and came into collision with the break-van at the rear of a goods-train standing nearly opposite the signal-cabin. Four passengers were injured. The signalman neglected to open the points for admitting the local-train into an empty siding.

18th September.—As the 7.5 p.m. passenger-train from Walsall for Dudley was passing through the junction points at the Walsall end of the Wednesbury station the engine and two carriages left the rails. Two passengers complained of being hurt. On the day previous to the accident a gang had been employed in relaying the permanent-way at this junction. The cotter by which the only connecting-rod between the points ought to have been secured had dropped out of its place, and was found on the ballast, and it could not, therefore, have been properly put in. The second connecting-rod had not been fixed.

14th November, 1876.—The 5.30 p.m. up-passenger-train from Liverpool came into violent collision, at a speed of 40 or 45 miles an hour, at the Wolverton station, with an up-coal-train for Willesden. Twelve passengers and six of the Company's servants were injured, and a considerable amount of damage was done to the rolling-stock. The facing-points, which were worked from the ground and wire-locked from the cabin 419 yards from them, had been left open for the coal-train to proceed from the siding on to the up-main-line; and the signalman was able to push back the lever in his cabin provided for locking them, whilst the points were in the wrong direction. There was no signal attached to the points to indicate their position, either to the signalman or to an approaching engine-driver. Rods and not wires should be employed in such cases, and the pointsman working the points from the ground should, in doing so, be compelled by better arrangements to lock the protecting signals at danger.

27th December.—As the 9.10 a.m. passenger-train from Aylesbury for London was passing out of the south end of the Primrose-Hill tunnel, it was turned through a pair of facing-points in the wrong direction into the goods yard, where it came into collision with an approaching shunting-engine. Twelve passengers and a servant of the Company were injured. The signalman in No. 3 signal-cabin, at the south end of the tunnel, allowed the facing-points on the up-line to stand open for the goods-yard instead of for the main line, under exceptional conditions of working. He was permitted, by the rules issued for his guidance, to use hand-signals to supersede the regular fixed signals at a dangerous point. The smoke in the tunnel also prevented an engine-driver from seeing the up-home-signal, so as to enable him to regulate his speed and pull up his train if necessary. Improvements in the signal-arrangements and mode of working were recommended.

London-and-North-Western-and-Great-Western Joint.

28th January, 1876.—As the 10 a.m. passenger-train from Birmingham and the 10.30 a.m. passenger-train from Shrewsbury, due to arrive at Hereford at 12.20 and 12.25 respectively, were being re-marshalled at the Barr's-Court station, Hereford, in the usual manner, that portions of them might be joined together and sent forward as one train to Newport, a carriage of the Birmingham portion left the rails, and was pulled over partly on its side, during the process of fly-shunting. A lady riding in this carriage was hurt. The dangerous practice of fly-shunting passenger-trains at the Barr's-Court station was afterwards prohibited. The whole of the station-arrangements required to be reformed, the accommodation to be increased, and the signals and points to be worked from properly constructed cabins, and interlocked.

19th February, 1876.—As the 5.30 p.m. passenger-train from Shrewsbury was entering the Hereford station the engine, tender, and dummy-van, which ought to have been turned by the signalman to the platform-line, took the wrong direction through a pair of facing-points, and a third-class-carriage behind them was thrown off the rails. A small flat stone was afterwards found between the tongue and the stock-rail, thus propping the points open and causing the accident; but how the stone was placed there did not appear. The points were 82 yards from No. 3 cabin, and were after the accident connected with a lever near that cabin, that the signalman might work them without leaving his post. The Hereford station-yard required general improvement, including the concentrating and interlocking of point and signal levers.

London-Brighton-and-South-Coast.

19th May—As the 10.45 a.m. Pullman-car-train from Victoria for Brighton was starting from the Victoria station the engine and tender left the rails at a pair of facing-points. None of the carriages left the rails. One passenger complained of injury. The flange of the tyre of the off-leading-wheel of the engine struck against the tip of the off-tongue of the facing points. The off-tongue was not quite close to the standard-rail as the engine approached it, from some slight want of adjustment in the junctions between the cabin and the points. To prevent such an accident, it was desirable to employ a locking-bolt at the points.

10th December.—The driver of a shunting-engine at the Norwood-junction passed in the wrong direction through a pair of points, and his engine, in running on a bridge, broke two cast-iron girders, and fell into a road. He mistook a hand-signal, made by a foreman of the goods-department, and intended for a train standing on the up-main-line, and thought it was intended for himself; and he omitted to look to a disc-signal by which he should have been guided. He then found his engine running on a road leading to a blind-siding, which was unprovided with buffer-stops or wheel-stops. His engine therefore ran over the end of the siding on to the bridge. The neighbouring girders of similar section were found not to be of sufficient strength for the weight of the engines employed.

London-Chatham-and-Dover.

13th October. — The 10.40 p.m. down-passenger-train from the Victoria station, London, for the Crystal-Palace, came into collision with an empty composite-carriage, which had been shunted into No. 10 local line, and left unsecured, and which ran back, on a falling gradient, into its way. A pair of points having been damaged in the course of this collision, the engine of a Midland passenger-train shortly afterwards left the rails in passing through them. One passenger complained of injury.

Metropolitan-and-St.-John's-Wood.

9th December.—The 4.18 p.m. up-passenger-train from the Swiss-Cottage for the Baker-Street station was turned from the single-line, through a pair of facing-points, to the down instead of to the up platform, in approaching the St. John's Wood station, and came into collision with the 4.18 p.m. down-passenger-train from the Baker-Street for the Swiss-Cottage station, which was standing on the down-line at the station. The St.-John's-Wood-Road signalman did not, in accordance with his instructions, wait to see that the up-train had arrived at the station before he returned his signal to danger, and altered his points. He turned over the facing-points whilst the up-train was running between the distant-signal and those points; and he thus, after leading the engine-driver to believe that the points were right for him to run into the station, altered them to the wrong direction. It was suggested that a disc-signal should be supplied to work with the points, which were in a tunnel, on a steep falling gradient, and could not be seen by an approaching engine-driver. This would afford sufficient warning to enable an engine-driver, with the breaks in use on this railway, to stop short, if the points should be wrong, of a train thus standing at the station.

Midland Railway.

31st January, 1876.—As the 11 a.m. passenger-train from Sheffield for Derby was entering the north end of the Derby Station the engine and three empty carriages left the rails at a set of three-throw points. The engine-driver and fireman were injured. The points, situated in a very busy part of the Derby Yard, had been for a considerable time in anything but a creditable condition, and the shunters had been obliged to kick the tongue to make it go home, as the signalman could not do so in working the lever from his box. They required to be properly adjusted, and a locking-bar and bolt, which would have prevented such an accident from occurring, should be added.

North-British Railway.

17th February, 1876.—As the 7.30 p.m. east-coast up-mail-train was passing the Drem Junction at a speed of 40 miles an hour the last two vehicles left the rails and broke away from the rest of the train, without the knowledge of the engine-driver, the cord-communication failing to act. The conductor was injured. The left wheel of the van apparently struck the fixed crossing-point, and the train was travelling through the facing-points, at which there was no locking-bolt or bar, at too high a speed.

North-Eastern.

4th February, 1876.—As the 4.45 p.m. passenger-train from Newcastle for Carlisle was entering the Carlisle station, the engine, break-van, and leading carriage left the rails at the facing-points leading to No. 2. dock-line. Parts of a stone had been crushed on the rail, had fallen between the tongue of the point and the stock-rail, and had prevented the points from shutting properly. A locking-bar and bolt should be attached to prevent such an accident.

5th February, 1876.—As the 11.45 a.m. passenger-train from Normanton for York was passing the facing-points at the Holgate Junction, the engine, tender, leading break-van, and 2 passenger-carriages ran forward on the proper line; but the third passenger-carriage left the rails, and fell over on its side; and the break-van, which was the last vehicle of the train, ran in a different direction, down another line. Three passengers complained of injury. The lever for working the points must have been moved by one of two men—a regular and a relief signalman—in the cabin as the train went over them. Harrison's wedge-apparatus was attached to the points. This did not prevent the lever from being moved, as a locking-bar would have done, while the train was passing.

5th June.—The 10.35 a.m. express-passenger-train from London for Edinburgh came into collision with the 2.15 p.m. slow-passenger-train from Berwick for Newcastle, in approaching the signal-cabin commanding the entrance to the Newcastle Central station. The engine of the Berwick train had taken the wrong direction in passing through a pair of facing-points, and was struck by the engine of the express-train as it stopped foul of the

down-main-line. Seven passengers and two servants of the Company complained of injury. A small stone had, it was believed, fallen in between the left tongue of the points and the standard rail. A locking-bolt was required to ensure the points being properly home before the signals could be lowered.

15th July.—As the 3.40 p.m. passenger-train from Hornsea for Hull was approaching the Burton-Constable station the engine left the rails at the facing-points of the loop-line. Two vehicles of the train were also thrown off the rails, but no passenger was injured, nor was any servant of the Company injured. A pair of self-acting points failed to fall back into their proper position, on the handle being released by the station-porter, after the passage of a goods-train, and on the approach of a passenger-train. The proper remedy for the prevention of such accidents in future was to apply the locking system over this branch as well as on other sections of the North-Eastern Railway. There were eight trains a day in each direction during the summer on this branch.

9th November, 1876.—The 12.30 p.m. passenger-train from East to West Hartlepool was improperly turned, when close to the latter station, through facing-points, into the goods-yard, and came into collision, 25 yards beyond the facing-points, with a train of empty-timber-trucks. No one was injured. The signalman at the Church Street junction lowered the signals for the passenger-train, but left the facing-points open for the goods-yard. If the points and signals had been interlocked, the accident would not have occurred. This was one of the few junctions on the line on which interlocking had not been introduced.

SUTHERLAND.

14th September.—The 1 a.m. up-passenger-train from Wick came into collision, at the Rogart station, with the 1.30 a.m. down-special-train of empty sheep-trucks from Inverness. Eleven passengers and the guard and breaksman of the passenger-train were injured. The collision was brought about by two causes: (1) the absence of the porter from the north end of the Rogart loop, in consequence of which the points were not set for the up-line to which the train ought to have been turned; (2) the engine-driver of the up-train assumed, because the signal arm had not gone properly to danger, that it was off for him to proceed, instead of treating it as an uncertain signal. It was desirable that the signals should be kept at danger except when the points were right for an approaching train, and that the engine-drivers should be instructed to be prepared to stop at the loop-line points if the porters were not in attendance.

TAFF-VALE-AND-GREAT-WESTERN.

18th September.—The engine and leading carriage of a Great-Western passenger-train from Merthyr for Quaker's-yard left the rails at the junction of the Taff-Vale with the Great-Western Railway at the west end of the Quaker's-yard low-level station. The leading wheels of the engine got astride of the facing-points. The locking arrangements, which were of an antiquated pattern, had not been kept in proper order.

SUMMARY.—CLASS I.

The 32 investigated accidents in this class,—at facing-points,—were the occasion of death to 3 servants of a Company, and of injury to 89 passengers and 32 servants of Companies. These accidents are divided amongst 16 Companies, in which the Caledonian, Glasgow-and-South-Western, the Great Northern, the Highland, and the Manchester-Sheffield-and-Lincolnshire do not appear. This class is the second in importance as regards numbers, and shows a material increase over the numbers of the previous year. In 18 cases there was negligence or mistake of servants, in 19 cases there were defective signal or point arrangements or want of locking-apparatus or of locking bars or bolts, in 5 cases there was defective maintenance, and in 6 cases defective construction of the permanent-way or works. It was observed in the report of the preceding year that as the apparatus and arrangements are improved, as better discipline is, with carefully trained men, more easily enforced, it was to be hoped that these accidents would be materially reduced in numbers and in serious consequences. It may here be added that similar consequences would probably result from the more common employment of *continuous-breaks*.

J.—*Accidents on Inclines.*

GREAT-WESTERN RAILWAY.

17th January, 1876.—Two runaway waggons came into collision at the Whitland-junction station with a passenger-train. Two passengers were injured. A weak and much worn tow-rope broke during a dangerous shunting operation, on a steep gradient of 1 in 50, and thus allowed the waggons to run back. Great credit was due to two porters who stuck to the waggons at the risk of their lives, while running back for four miles. To obviate such a mode of working a through-crossing from the down-loop-line to the sidings, with some alteration of the latter, and catch-points, were required at Narbeth, as well as certain improvements at Whitland, and direct telegraph-communication between Narbeth and Whitland.

LANCASHIRE-UNION (LONDON-AND-NORTH-WESTERN AND LANCASHIRE-AND-YORKSHIRE JOINT).

1st January, 1876.—Two collisions occurred on the 1st January on the inclines between Ince-Moss and De-Trafford,—the first between nine waggons which were running away down a gradient of 1 in 66, and an engine and break-van, which were following them,—and the second between the same engine and van and a following ballast-train. One servant of the company was killed, and three were injured. There was no break-van behind the waggons, and therefore when they broke away there was no means of stopping them. There had been a loose system of working highly dangerous to those engaged. The gong communication between two cabins was not maintained in proper order. Catch-points were required.

MIDLAND-GREAT-WESTERN.

16th September.—On the arrival of the 3 a.m. goods-train from Dublin at the Killucan station the waggons and break-van after being uncoupled from the engine, ran back along the down-line, and came into collision with a down-special-train from Dublin for Moate. A herdsman who was travelling in the break-van at the tail of the goods-train was injured in jumping out. Either sufficient breaks were not put down, or the herdsman, travelling improperly in the break-compartment, may have tampered with the break. The loaded part of the train was standing on an incline of 1 in 120. A runaway siding on the down line, which was required, was to be supplied.

MIDLAND.

15th August.—As a down goods-train from Bradford for Carlisle, consisting of 9 loaded and 28 empty waggons and a break-van, was descending the incline between Kirkby Stephen and Crosby Garrett, it became separated, from some undiscovered cause, into two parts. The

leading portion was stopped by signals at the Ormside station, in consequence of a telegraphic notice received there by the signalman, and the hinder portion came into collision with it. 15 waggons were thus thrown off the rails, and some of them fell over on the up-express passenger-train which was passing at the time. The guard in the front van of the express train and two of the passengers were slightly injured. The signalman acted unwisely, first in allowing the up-passenger-train to proceed, and secondly in stopping the front part of the goods-train. In compliance with the regulations he should have detained the passenger-train at his post till he was assured that the up-line had not been obstructed and simply have advised the engine-driver of the goods-train that a portion of his train was detached. The express train was fitted with the Westinghouse automatic break, which became self-applied as one of the waggons struck the front van.

RHYMNEY-AND-GREAT-WESTERN (BARGOED JOINT).

1st March, 1876.—The engine-driver of a Great-Western mineral-train lost control of his train on an incline of 1 in 40, and it ran into a Rhymney train of empty waggons at the Bedlinog Colliery Junction. Six of the Great-Western Company's servants were injured. The practice of running such heavy trains on lines of very steep gradients was always attended with uncertainty and risk, and the operation of pinning down the breaks of the trucks whilst the trains were in motion was attended with danger to the men.

SUMMARY.—CLASS J.

The 5 accidents in this class,—on inclines,—were the occasion of death to 1 servant of a Company, and of injury to 5 passengers and 11 servants of Companies. There was no such accident in Scotland. In 3 cases there was negligence or mistake of servants of Companies; in 2 cases there were defective signal or point arrangements, or want of safety-points or of locking; in 2 cases there was want of accommodation for the safe working of the traffic; in 3 cases there were insufficient regulations or want of discipline; and in 1 a want of break-power. In one instance there was an illustration of the self-application of an automatic brake.

M.—*Miscellaneous.*

LONDON-AND-NORTH-WESTERN AND GREAT-WESTERN JOINT (CHESTER-AND-BIRKENHEAD).

1st September.—A light-engine, running tender-first, in returning from the Rock-Ferry station, ran over and killed a boy, six years old, who had got on the line at Tranmere. The wall at the side of the line had, owing to the rubbish shot against it and from other causes, become reduced in height in some places to not more than 2 feet. It was desirable that the walls should be raised, and that other measures to prevent trespassing should be adopted.

GENERAL SUMMARY.

The investigated train-accidents for 1876 were, then, 149 in number, against 161 for 1875, 168 for 1874, 241 for 1873, and 238 for 1872; and the usual causes contributed or combined to produce them in the following proportions for each of the five years :—

Causes.	Nos. of Cases.				
	1872.	1873.	1874.	1875.	1876.
Fracture or unloosening of couplings -	4	4	5	5	3
Defective maintenance of rolling-stock -	11	15	5	11	8
„ „ of road or works -	16	24	13	20	19
Defective construction of rolling-stock -	11	12	8	6	6
„ „ of road or works	4	6	4	4	11
Insufficient or defective accommodation for the requirements of the traffic -	13	37	18	23	23
Insufficient establishment, long hours, or inexperienced servants - -	7	17	1	12	8
Insufficient break-power - -	8	12	6	10	21
Defective arrangement of signals or points, or want of or defective locking-apparatus, or want of safety-points or locking-bars or bolts - -	71	78	49	53	48
Insufficient or inadequately enforced regulations - - - -	11	33	24	37	29
Defective system for securing intervals between trains, or want of telegraph-communication or of block-system -	42	59	36	43	25

Causes.	Nos. of Cases.				
	1872.	1873.	1874.	1875.	1876.
Negligence, want of care, or mistakes of officers or servants - - -	180	182	126	126	101
Excessive speed, having regard to engine, road, or other circumstances - -	16	12	9	13	18
Foggy or stormy weather, or snow-storms - - - - -	14	22	28	9	5

These figures are not satisfactory, either as to actual results, or by comparison with former years. They indicate that much is still required, in addition to what has been done, to provide for safety in working, more or less, on different systems of railway, and they point to the special departments in which improvement should be effected. The highest figure, 101, represents, as usual, the number of cases in which negligence or mistakes of officers or servants entered into these 149 train-accidents; and the four figures, 48, 25, 29, and 23, represent, respectively, means by which that negligence may in a great degree be prevented, namely—(1) by better arrangements of signals or points or interlocking, (2) by a better system for securing intervals between trains, (3) by improvement of regulations or discipline, and (4) by an adequate provision of lines and sidings for conducting the traffic. Then, again, 27 represents the number of cases of defective maintenance in road, works, or rolling-stock; 8, the number of cases of inexperienced or insufficient servants, or too long hours of duty; and 21, the number of cases of insufficient break-power.

Break-power.

The last-mentioned item is, in reality, a more important one than appears from the figure 21, because there are always numerous other instances in which collisions might be prevented, or their serious consequences might be averted, if engine-drivers and guards had in their own hands the power of readily stopping their trains, or if the break acted of itself at once on the happening of an accident.

There is it would seem no improvement which would do more to prevent accidents, or to mitigate their serious consequences than the use of *continuous-breaks*; and the time has now come when it is incumbent upon the Railway Companies to agree amongst themselves as to which of the various systems of continuous breaks which have been brought forward is best adapted for general adoption. It is for the Companies to consider the various conditions which such breaks should fulfil, and to decide upon the system of break which best complies with those conditions. An instructive example has been set by the Belgian Government, who have recently, in the report of a Commission specially appointed for the purpose, adopted a continuous-break for the Belgian state railways; and it is much to be regretted that the Railway Companies of this country have not combined for a similar object.

1. *Continuous-Breaks under control of Engine-drivers.*—The means of using continuous-breaks, under the control of the engine-drivers, is of the greatest importance, inasmuch as it would be applicable in the greater number of accidents, because it is the engine-driver who generally first becomes aware of danger, or of the necessity for avoiding it. Where an engine-driver sees any obstruction or obstacle in his way whilst travelling, whether a slip in a bank, or a fall of earth or rock in a cutting, or a horse or cow, or a vehicle or gate at a level-crossing, or a trolly on the line, or another engine or train,—on the line, or at a station or junction,—or a vehicle or part of a load thrown across the line on which he is travelling from a train proceeding in the opposite direction; or where any part of his engine fails, or if it leaves the rails, at facing-points or otherwise, or if he sees an imperfection in the permanent-way, the risk will be very much reduced, or he may be able to avoid a serious or fatal accident, if he is able at once to apply a break on his engine and on every vehicle in his train; and the rapidity with which he may be able to bring this retarding force to bear through the whole train is an important element, especially in foggy weather, or snowstorms, or in heavy rain, or in darkness, or when his view is from any cause obstructed.

In looking through the reports of the different inspecting officers, the accidents are constantly attributed to a want of caution on the part of the engine-drivers in approaching distant or other signals, or in passing them, or in approaching at too high a speed places known to be more or less dangerous or likely to be obstructed, or to the rails being slippery, or the view being limited; and great fault is found with these men from

time to time. But they have, in fact, been more or less trained to risk by being timed to run at excessively high speed, with trains that cannot be stopped, sometimes in 1,200 yards or more; and they are told when collisions occur that they have been running incautiously, and that they ought to have had their trains under control. This really means running on many portions of their journeys at speed which would not admit of their keeping time, and especially in bad or foggy weather, with slippery rails and heavy trains. These difficulties may be obviated in a greater or less degree by the use of continuous-breaks, by means of which they may be able to bring their trains to a stand in 300 in place of 1,200 yards. They may then work with more confidence, and without running continual risk; they will be able to obey the regulations which direct them to have their trains under control; they will not lose so much time in checking speed as a precaution at necessary places; discipline may be better maintained amongst them; the excuses or allowances which might now fairly be made for them, but which they do not always get the benefit of, will no longer be required. Their lives, as well as the lives of their passengers, will be preserved instead of sacrificed in many a case of unforeseen emergency.

2. *Continuous-Breaks under control of Guards.*—The means of employing continuous-breaks, under the control of the guards, is also of great importance in a considerable number of accidents.

When an engine-driver is considered to be running at too high a speed, or is seen to be disobeying signals; or when a carriage in the train leaves the rails, or becomes disabled by losing a tyre, or by the fracture of an axle, and is dragged along off the rails unknown to the engine-driver, but known to one of the guards; or when a carriage takes fire; or if an engine-driver is overrunning a station at which he ought to stop, or is wrongly running on a single-line with the risk of meeting a train in the opposite direction; or when a guard may have seen a hand-signal on the line, or from a signal-cabin or station, or from a passing train,—in all such cases the guards may usefully be provided with the means, by applying continuous-breaks, of bringing the engine and train to a stand. And this is, in fact, the best means that can be afforded to them of attracting the attention of the engine-drivers. There were several cases of this de-description in the accidents of 1876, besides the numerous others which were not investigated.

3. *Continuous-Breaks with automatic action.* — In order to have the means of employing continuous-breaks automatically, it is necessary to have break-power on the engine and on each carriage, and appropriate fittings on every vehicle in a passenger-train, so arranged that the break shall be self-applied throughout the train immediately on the separation of the couplings in any part of it, to meet certain contingencies which too often arise. When, for instance, a train suddenly leaves the rails, and the engine, as not unfrequently happens, turns over on its side, or end for end, and wheels uppermost, the engine-driver and fireman have no time to do anything, or even to look out for their own safety, and it is a question of life or death to the passengers to have the breaks self-applied instantly on every vehicle, to check the speed of all at the same instant, and to prevent the leading carriages from being destroyed by the momentum of those behind them. The accidents during the past year,—near Lowestoft on the Great-Eastern Railway, at Claverdon on the Great-Western Railway, at Long Ashton on the Great-Western Railway, at Calne on the Great-Western Railway, near Croydon on the Brighton Railway, at Cornbrook on the Manchester-South-Junction-and-Altrincham Railway,—were instances of this description. Then, again, when after any failure or defect of the permanent-way or rolling-stock, the couplings become separated, instant self-application of the breaks is very desirable to avoid risk or prevent serious consequences; as, for instance, in the cases too fatal and too well known, at Wigan and Shipton, where the leading parts of the trains went forward whilst the hinder parts were dashed to pieces; or in the case at Hatfield, on the Great-Northern Railway, last September, where, after the failure of a crank-axle, the train could only be brought to a stand, after it had separated into three parts, in 927 yards; or at Ballyshannon last year, when a composite carriage, after becoming separated with other vehicles from the train in front, ran down the slope of an embankment; or where the carriages became separated from the engine in the Calton tunnel near Edinburgh; or when engines become separated from their carriages, or the carriages from one another, as in the case of such a violent collision, without previous warning, as the first collision on the Great-Northern Railway at Abbott's Ripton. Another instance during the past year was at Killarney Junction, on the Great-Southern-and-Western-of-Ireland Railway, where an engine, after mounting at facing-points, broke away from its train, and fell over on its side on its driver; and another at Drem, on the North-British Railway, when, at a speed of 40

miles an hour, the last two vehicles of a train left the rails and broke away from the train without the knowledge of the engine-driver. There were numerous other cases, of casualties reported to the Board of Trade, already referred to, in which much risk would have been avoided if the trains had been supplied with self-acting breaks.

On the other hand, there have already been three instances, of which the particulars will be found in the précis, illustrating the advantages of automatic action, with continuous-breaks, on the Midland Railway, the first at Heeley, where the leading wheels of the truck of a Pulman's car dropped between the rails, and the front part of the train which was travelling at 60 miles an hour went forward; whilst the rear carriages acted upon by the automatic breaks came to a stand immediately behind the car; the second at Ormside, where some waggons, falling on a passing passenger-train, caused a separation in the leading part of it; and the third at Whitehall Junction, near Leeds, where, in the course of a collision, an engine became separated from a train, and the carriages were stopped by the self-application of the breaks. It is, therefore, to be remembered that in the cases of collisions, and of passenger-lines being suddenly obstructed by vehicles from other lines or from sidings, or otherwise, as well of trains or parts of trains leaving the rails from defects of the road or rolling-stock, automatic action in break-power, in other words break-power which becomes at once self applied on any accident happening to the train is an element of great value.

But, whether breaks be applied by the engine driver, or by the guard, or both, or automatically, it is essential that their action shall be instantaneous, so as to provide that they shall be applied in cases of emergency in the shortest possible time; and it is also essential that there should, on continuous systems at any rate, be uniformity of break, so that when vehicles from one line are connected with trains of another line the break power may be available for both.

General Remarks upon Investigated Accidents.

It is to be observed that of the 149 train-accidents, distributed amongst 36 Companies, no less than 67 occurred on the lines of 5 Companies in the following proportions, namely, 19 on the Great-Western, 17 on the London-and-North-Western, 11 on the Lancashire-and-Yorkshire, 11 on the North-Eastern, and 9 on the Midland Railways; whilst the Great-Eastern and the Caledonian were responsible for 8 accidents, the Great-Northern for 6 accidents,—one of the 6 was the most serious,—and no other Company for more than 4 accidents. The various conditions of mileage and traffic must not be forgotten in considering these figures, but it is at the same time interesting to analyze the causes that have been mainly apparent as occasioning accidents on these different systems, which causes are given in detail for every Company in the second table of Appendix No. 2. It will be seen that they operated as follows on the systems of the five first Companies.

Of the 19 accidents on the Great-Western Railway there were 10 cases of negligence or mistakes of servants, 7 cases of want of sufficient accommodation for the safe working of the traffic, 7 cases of defective maintenance, 5 cases of defects of signal or point arrangements or want of locking, and 2 cases of insufficient regulations or want of discipline.

Of the 17 accidents on the London-and-North-Western Railway there were 15 cases of negligence or mistakes of servants, 6 cases of defects of signal or point arrangements or want of locking, 3 cases of want of sufficient accommodation for the safe working of the traffic, 4 cases of defective system for securing intervals between trains, 4 cases of insufficient break-power, and 3 cases of insufficient regulations or want of discipline.

Of the 11 accidents on the Lancashire-and-Yorkshire Railway, there were 10 cases of negligence or mistakes of servants, 2 cases of defective system for securing intervals between trains, 4 of defects of signal or point arrangements or want of locking, 3 of insufficient regulations or want of discipline, and 3 of want of sufficient accommodation for safe working.

Of the 11 accidents on the North-Eastern Railway, there was 1 case of negligence or mistakes of servants, 1 of defective system for securing intervals between trains, 6 of defects of signal or point arrangements or want of locking, 1 of insufficient regulations or want of discipline, and 2 of defective maintenance of permanent-way, works, or rolling-stock.

Of the 9 accidents on the Midland Railway, there were 5 cases of negligence or mistakes of servants, 1 of defective system for securing intervals between trains, and 2 of defective maintenance.

As Captain Tyler has remarked in the report of the preceding year, it would not be right to attach more importance to these comparisons and figures than

they deserve, and full allowance should be made for the difficulties incidental to the management of extensive railway systems, and to the conduct of ever-varying railway traffic. But it must be remembered, on the other hand, that the defects thus brought to light by the occurrence of accidents, and by the investigation of those which happen to be of a serious character, are only indications of more numerous defects of the same description requiring to be remedied. The object of noticing them here is, not to find fault with individuals, or with the management of particular Companies, in which there is undoubtedly much to admire, and much, regarding them as national institutions, to be proud of; but it is a simple duty to the public, and to the Companies themselves, to ascertain, from year to year, and to state, the precise causes of the accidents which result in serious consequences, as well as to enumerate those means and appliances, of admitted value, tried by the unfailing test of experience, by which great numbers of them may be avoided and the public safety may be better secured. And it is the more necessary to do so, impartially, carefully, and unmistakeably, because there is no other mode of controlling the management of the various Companies; and because, having regard to the conditions of railway enterprise in this country, the best means of inducing the adoption of such improvements is by thus drawing public attention to the want of them, for the consideration of those who, in managing the railways, are responsible for their introduction, as well as of those who in using the railways will benefit by their application.

Total of Accidents to Passengers.

The total number of accidents to passengers in the year is usually divided into those arising (1) from circumstances over which they have no control, and (2) from their own misconduct or want of caution. But this division can hardly be satisfactorily maintained in all cases. In the case of accidents not investigated by the Board of Trade, the result of the coroner's inquiry is made use of as regards fatal injuries, but the brief reports of the Companies only are available as regards personal injuries where death does not ensue. It has been seen that 34 passengers were killed, and 1,101 injured, in the 149 investigated train-accidents, and 1 other was killed, mainly from his own want of caution, by being run over by a train; but there was 1 passenger killed and 144 injured, and 1 person was killed and 5 persons were injured who were not passengers, in uninvestigated train-accidents. Besides these, 2 passengers were killed and 34 injured from causes beyond their own control, and 101 passengers were killed, and 604 injured, as reported by the Companies, from their own misconduct or want of caution. Of these latter, 60, or three-fifths, were killed, and 492, or more than three-fourths, were injured by falling, either between trains and platforms, or in joining or alighting from trains. These large numbers would be greatly reduced by improved arrangements for adapting the carriages and platforms to one another, and by providing the sides of the carriages with continuous foot-boards. This is a simple remedy, which, after the experience afforded of its advantages, the Companies have many of them too long delayed to provide. Then, again, 4 passengers were killed, and 35 injured, in travelling, by falling out of carriages. As many as 33 were killed, and 32 injured, in crossing the line at stations,—numbers which might be reduced by increased provision and employment of foot-bridges and subways. In the shutting of carriage-doors 28 were injured; and 6 were killed, and 51 injured, from miscellaneous causes.

Accidents to Persons other than Passengers or Servants of Companies.

Trespassers form the most important class under this head. Of these 257 were killed, and 134 injured, during the year. This large total of 391 persons killed or injured, including so large a proportion of fatal cases, shows that the carelessness of the public contributes to fatal accidents no less than the want of precaution by the Companies. The next class in importance is that of persons using level-crossings, of whom 59 were killed, and 30 were injured. Some of these accidents might be avoided by increasing the number and the use of foot-bridges over, or passages under the railways. Here again the recklessness of the public is one great cause of accident. In the miscellaneous class, composed mostly of persons coming to the railways on business, but not being passengers or in the service of the Companies, 69 were killed, and 77 were injured. No measure of precaution can be adopted to prevent suicide, by persons throwing themselves in the way of trains. During the year 48 persons thus destroyed their own lives.

Casualties amongst Officers and Servants of Railway Companies or of Contractors.

These casualties, described in detail in the returns already laid before Parliament, comprise, as already stated, 673 killed, and 2,600 injured, for 1876; against 765 killed, and 3,618 injured for 1875. If the total number of such railway employés be taken at 280,000, then there would have been, in round numbers, about 1 in every 416 killed, and 1 in every 86 killed or injured during the year. These deaths and injuries were not, of course, regularly distributed amongst the various branches of the railway service. Some of the occupations of railway employés are free from any peculiar risk, whilst others are relatively very hazardous. The engine-drivers and firemen, the goods guards and brakesmen, the shunters and ground-pointsmen, and the platelayers, principally contribute to swell the annual numbers of these casualties.

Besides 28 killed and 236 injured by casualties to trains on permanent way, there were 85 killed, and 433 injured, in shunting operations; besides 4 killed, and 81 injured, in loading or unloading goods or in sheeting waggons; 8 killed, and 64 injured, by striking against vehicles on adjoining lines of rails; 7 killed, and 140 injured, in breaking, spragging, or chocking the wheels of railway vehicles. In coupling or uncoupling vehicles 53 were killed, and 348 injured; besides 28 killed, and 72 injured, whilst passing between vehicles. Then, again, 6 were killed, and 47 injured, by striking against over-bridges or other obstructions; 4 were killed, and 45 injured, in working at cranes or capstans; 2 were killed, and 27 injured, by falling from ladders, scaffolds, or platforms; 62 were injured by waggon-doors or materials falling on them; 10 were killed, and 103 injured in cleaning or attending to locomotive engines; and 6 were killed, and 122 injured, from various miscellaneous causes.

In addition to the 46 passengers killed, and 116 injured, in falling between railway vehicles and platforms, 21 servants of Companies were stated to be killed, and 63 to be injured in a similar manner. Besides the above, 77 servants are returned as having been killed, and 413 injured, in joining, leaving, or falling off engines or vehicles.

In working on the permanent-way 114 were killed, and 173 were injured; besides 22 who were killed, and 12 injured, in walking along the permanent-way to or from their work; 193 were killed, and 157 injured, whilst walking, crossing, or standing on the lines; and 5 were killed, and 2 injured, in attending to the gates of level-crossings.

Interlocking of Signal and Point Levers, and absolute Block-working.

The progress made during the past year in the interlocking of signal and point levers, and in extension of the block-system of working has no doubt contributed materially to safety in railway working.

From the return just presented to Parliament the progress in the United Kingdom in the interlocking of signal and point levers is represented by a per-centage increase of 6 per cent., and the progress in the application of the absolute block-system to a further proportion of 7 per cent. of the length of railways open for passenger traffic.

Intercommunication in Railway Trains.

In the Appendix No. 5 to this Report will be found a report upon the system of electrical communication between passengers and guards now being applied to the trains of the London-Brighton-and-South-Coast Railway Company. This system has been approved by the Board of Trade in place of that previously sanctioned by them and hitherto in use on that Company's line.

I cannot conclude this Report without calling attention to the serious loss the Department has sustained by the resignation of Captain (now Sir Henry) Tyler. He invariably performed the duties appertaining to his office with such marked zeal, and conspicuous ability, as to gain not only the confidence and respect of the Department, but also that of the public and the railway world; and the severance of Sir Henry Tyler's connexion with the Board of Trade must be long felt by all those with whom he has been associated during the last 24 years.

I have the honour to be,
Sir,
Your most obedient servant,
Henry G. Calcraft.

APPENDIX No. 1.

LIST of the ACCIDENTS which have been reported upon by the Inspecting Officers of the Department during the yea 1876.—Classified according to the Nature of each Accident, and the Causes to which it may be attributed.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.														
A.—*Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connexion with the Permanent-Way or Works.*																							
CALEDONIAN:																							
8th July.—A passenger-train left the rails at Coupar Angus	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	1	–			
GREAT-EASTERN:																							
1st January.—Part of a passenger-train left the rails between Mutford and Somerleyton	–	8	3	4	–	–	1	–	–	–	–	–	–	–	–	1	–	1	1	–			
19th July.—A carriage in a passenger-train left the rails in the Clapton Tunnel	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–			
GREAT-WESTERN:																							
22nd March.—The engine of a passenger-train left the rails between Claverdon and Bearley	–	–	–	4	–	–	1	1	–	–	–	–	–	–	–	–	–	–	1	–			
4th April.—Part of a passenger-train left the rails near Acton	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–			
24th May—The leading carriage of a passenger-train left the rails at Hele station	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–			
27th July.—The engine and three vehicles of a passenger-train left the rails at Long Ashton	–	14	2	2	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–			
4th September.—The engine of an express-train struck a suspended baulk of timber at Challow	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–			
7th September.—The engine of a passenger-train left the rails near Radstock	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–			
27th December.—A passenger-train left the rails on the Calne Branch	–	5	–	2	–	1	1	–	–	–	1	–	–	–	–	–	–	1	1	–			
HIGHLAND:																							
12th August.—The carriages of a passenger-train left the rails at Forres	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–			
LANCASHIRE-AND-YORKSHIRE:																							
3rd May.—The van of a train of empty carriages left the rails at Accrington	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–			
17th September.—Part of a passenger-train left the rails at Great Howard Street Junction Cabin Liverpool	–	4	1	2	–	–	1	–	–	–	–	–	–	–	–	1	–	1	–	–			
LONDON-AND-NORTH-WESTERN:																							
27th February.—Part of a special goods-train left the rails at Eccles Junction	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–			
22nd November.—A passenger-train ran over a milk-truck at Madeley	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–			
LONDON-BRIGHTON-AND-SOUTH-COAST:																							
8th June.—The engine and four carriages of a passenger-train left the rails between Gloucester Road and Windmill Bridge Junctions	–	22	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–			
16th June.—The engine of a passenger-train left the rails near the Crystal Palace Station	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–			

continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																	
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.												
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.													

A.—*Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connexion with the Permanent-Way or Works*—continued.

MANCHESTER-SOUTH-JUNCTION-AND-ALTRINCHAM: 14th July.—The engine and part of a passenger-train left the rails at Cornbrook Junction	–	3	1	1	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–
MIDLAND: 22nd November.—A Pullman car running in a down-express-train left the rails at Heeley	–	5	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
MID-WALES: 1st July.—The engine and part of a passenger-train left the rails at Three Cocks Junction	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	1	–	–
NORTH-EASTERN: 19th July.—An engine and passenger-train left the rails at Burton Salmon	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	1	–	–
25th July.—A carriage in a passenger-train left the rails at Bishop Auckland	–	3	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–
1st August.—The engine and tender of a passenger-train left the rails at Bishop Auckland	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–
TOTAL	–	69	7	21	–	2	13	1	4	1	1	–	–	–	–	4	–	11	9	–	1

B.—*Accidents from Boiler-Explosions, Failures of Axles, Wheels, or Tyres, or from other Defects in the Rolling Stock.*

CALEDONIAN: 29th August.—A down-passenger-train ran into a broken down goods-train, which had fouled the line at Burnhouse Sidings	–	10	–	2	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
GLASGOW-AND-PAISLEY-JOINT: 28th December.—A passenger-train ran into a good waggon, which had fouled the line at Pollock Junction	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
GLASGOW-AND-SOUTH-WESTERN: 28th March.—The boiler of an engine exploded between Kilmarnock and Irvine	–	–	4	9	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–
8th December.—A light engine ran away into a train of carriages, from which the passengers had just alighted at Ayr	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
GREAT-EASTERN: 5th June.—The tyre of the left leading-wheel of a break-van flew off near Edmonton Junction	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
GREAT-NORTHERN: 16th September.—The crank-axle of a passenger-train engine broke near Hatfield	–	6	–	3	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
GREAT-NORTHERN-OF-IRELAND: 3rd May.—A mixed train left the rails between Beleck and Ballyshannon	–	2	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
LANCASHIRE-AND-YORKSHIRE: 13th December.—Two trucks became detached from, and ran into the passenger-train, between Freshfield and Ainsdale	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–
LONDON-AND-SOUTH-WESTERN: 7th February.—The tyre of a brake-van wheel attached to a passenger-train broke near Micheldever	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–

continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																	
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.												
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-Driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.													

B.—*Accidents from Boiler-Explosions, Failures of Axles, Wheels, or Tyres, or from other Defects in the Rolling Stock*—continued.

MIDLAND: 16th February.—Part of a passenger-train left the rails between Chiltern Green and Luton	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
NORTH-BRITISH: 11th December.—A runaway train of passenger carriages came into collision with an engine and van	–	13	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–
NORTH-EASTERN: 12th December.—The fire-box of the engine of a goods-train burst at West Hartlepool	–	–	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–
TOTAL	–	33	5	17	2	3	–	4	–	–	–	–	1	–	–	2	–	4	–	–	–	–

C.—*Accidents from Trains entering Stations at too great Speed.*

GREAT-WESTERN: 4th September.—A passenger-train ran into the buffer-stops at Weston-super-Mare	–	2	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–
GREAT-WESTERN-AND-LONDON-AND-SOUTH-WESTERN-JOINT: 13th September.—A London-and-South-Western passenger-tran ran into the buffer-stops at the Portland-Joint Station	–	22	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	1	–	–	–
LONDON,-BRIGHTON,-AND-SOUTH-COAST: 20th February.—A passenger-train ran into the buffer-stops at Littlehampton.	–	4	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–
TOTAL	–	28	–	2	–	–	–	1	–	–	–	1	–	–	–	–	–	3	2	–	–	–

D.—*Collisions between Engines and Trains following one another on the same Line of Rails, excepting at Junctions, Stations, or Sidings.*

GLASGOW-AND-SOUTH-WESTERN: 1st April.—An express train overtook a live-stock-train between Dornock and Gretna-Green Stations	–	1	–	–	–	1	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–	–
GREAT-EASTERN: 11th November.—A passenger-train overtook a ballast-train between Manor-Sidings and Stamford-Hill	–	2	–	1	–	–	–	–	–	–	1	–	–	–	1	–	–	1	–	–	–	–
METROPOLITAN: 1st July.—A (G.W.) passenger-train overtook a disabled (MD.) passenger-train between Farringdon Street and King's Cross Stations	–	36	–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–
TOTAL	–	39	–	7	–	1	–	–	–	–	1	1	–	–	1	–	1	3	–	–	–	–

E.—*Collisions at Junctions.*

CALEDONIAN: 22nd April.—A passenger-train came into collision with a train of empty waggons at Gushetfaulds Junction	–	40	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–
2nd December.—A passenger-train came into collision with a mineral-train at Southfield Junction	–	5	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	1	–	–	–	–
20th December.—A goods-train came into collision with a mixed train at Kirriemuir Junction	–	3	–	3	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–
CITY-OF-GLASGOW-UNION: 26th September.—A passenger-train came into collision with a goods-train at College Junction	–	6	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–

continued.

E.—*Collisions at Junctions*—continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.														
GLASGOW, - BARRHEAD, - AND - KILMARNOCK JOINT:																							
16th May.—A passenger-train came into collision with a train of empty carriages near Victoria Junction - - -	–	48	–	3	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–		
GREAT-NORTHERN:																							
23rd September.—A passenger-train came into collision with a goods pilot-engine at Hammerton Street Junction - -	–	5	–	3	–	–	–	–	–	–	1	–	–	1	–	–	–	1	–	–	–		
10th October.—A passenger-train ran into an iron ore train at Holmes West Junction, Lincoln - - - - - -	–	4	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–		
GREAT-NORTHERN-AND-MANCHESTER,-SHEFFIELD,-AND-LINCOLNSHIRE-JOINT:																							
14th April.—One excursion-train ran into another at Ardwick Junction - -	–	32	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–		
LANCASHIRE-AND-YORKSHIRE:																							
12th October.—One passenger-train ran into another at Robin Hood Colliery Junction - - - - - -	–	5	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
LONDON-AND-NORTH-WESTERN:																							
6th June.—A pick-up goods-train overtook a mineral-train between Disley and Hazelgrove Stations - - -	–	1	1	2	–	–	–	–	–	–	–	–	–	–	–	1	1	1	1	–	–		
6th October.—A goods-train ran into a train of empty waggons, and a passenger-train came into collision with the goods-train at Ardwick Junction - -	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–	1	1	–	–	–		
LONDON-AND-SOUTH-WESTERN:																							
13th April.—A passenger-train overtook a train of empty carriages near Kingston Junction - - - - - -	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–		
LONDON,-TILBURY,-AND-SOUTHEND:																							
6th December.—Two passenger-trains came into collision at Upper Abbey Mills Junction - - - - - -	–	20	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
MANCHESTER, - SHEFFIELD, - AND - LINCOLNSHIRE:																							
15th November.—A passenger-train came into collision with a mineral-train at Hexthorpe Junction - - -	–	8	–	2	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	1	–		
MANCHESTER-SOUTH-JUNCTION-AND-ALTRINCHAM:																							
12th August.—Two passenger-trains came into collision at Altrincham Junction -	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–		
METROPOLITAN-DISTRICT:																							
29th January.—Two passenger-trains came into collision at Hammersmith Junction	1	46	–	4	–	–	–	–	–	–	–	1	–	1	–	1	–	–	–	1	–		
20th February.—A light engine came into collision with a passenger-train at Gloucester Road B. Junction - - -	–	2	–	1	–	–	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–		
MIDLAND:																							
25th September.—A passenger-train and a goods-train came into collision at Whitehall Junction - - - -	–	8	–	3	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–		
NORTH-EASTERN:																							
26th February.—A passenger-train came into collision with a mineral-train at Preston Junction - - - - -	–	4	–	2	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–		
TOTAL - - -	1	241	1	25	–	–	–	–	–	2	1	3	–	9	1	3	8	16	1	3	–		

F.—*Collisions within fixed Signals at Stations or Sidings.*

CALEDONIAN:																							
19th August.—One passenger-train ran into another at Rutherglen - - - -	–	5	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–		
24th August.—A passenger-train ran into a goods-train at Barnhill - - - -	–	3	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–		
8th December.—Three rear vehicles of a passenger-train ran into the front part thereof at Carstairs - - - - -	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		

continued.

F.—*Collisions within fixed Signals at Station or Sidings*—continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.											
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.												
GREAT-EASTERN:																					
3rd November.—A goods-train ran into a passenger-train near Devonshire Street goods Station	–	6	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	1	–	–	–
10th November.—A passenger-train ran into a train of empty carriages at Enfield	–	2	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
GREAT-NORTHERN:																					
21st January.—A passenger-train came into collision with a coal-train, and another passenger-train ran into the débris at Abbots Ripton	13	53	–	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
14th April.—An up-mail-train ran into an up-express-goods-train near Corby	–	1	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	1	–	–	–
23rd December.—A passenger-train ran into a disabled goods-train at Arlesey Siding Station	4	115	2	1	–	–	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–
GREAT-NORTHERN-AND-MANCHESTER-SHEFFIELD-AND-LINCOLNSHIRE:																					
6th April.—Two passenger-trains came into collision in the Doncaster Station-yard	–	47	–	6	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–
GREAT-NORTHERN-OF-IRELAND:																					
12th May.—A passenger-train came into collision with a shunting-engine and train of empty vehicles at Antrim	–	6	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	1	–	–
GREAT-WESTERN:																					
4th January.—A special-goods-train came into collision with some waggons at Tipton Junction	–	–	1	1	–	–	–	–	–	1	–	–	–	1	–	1	–	–	1	–	–
13th February.—A ballast-train ran into a goods-train at Bridgend Station	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	1	1	–
15th February.—A dead-engine and a passenger-train came into collision at Taunton Station	–	4	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
5th June.—A passenger-train came into collision with a train of empty carriages at Bristol	–	1	–	1	–	–	–	–	–	1	–	–	–	1	–	–	1	1	–	–	–
14th August.—A passenger-train and an excursion-train came into collision at Bristol	–	30	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–
21st September.—A passenger-train ran into a train of empty carriages at the Snow Hill Station, Birmingham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
2nd October.—An express-train came into collision with some cattle-trucks at the North Somerset Junction, Bristol	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
LANCASHIRE-AND-YORKSHIRE:																					
8th February.—A passenger-train ran into portion of a goods-train at Bolton Station	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	1	–	1	–	–	–
25th April.—An express-train was run into by a light engine at Salford	–	56	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	1	–	–	–
5th September.—A special-goods-train ran into a train of empty carriages at Halifax	–	–	–	2	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
30th October.—A passenger-train ran into a cattle-train at Brierfield near Burnley	3	11	–	2	–	–	–	–	–	1	–	1	–	1	–	–	1	1	–	–	–
LONDON-AND-NORTH-WESTERN:																					
13th January.—A train of empty waggons ran into part of a passenger-train at Tamworth	–	6	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–
23rd February.—A passenger-train ran into a goods-train at the Atherton Station	–	11	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–
16th August.—A pilot-engine and six carriages ran into and pushed seven others against the buffer stops at New Street Station, Birmingham	–	3	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–
26th September.—A coal-train came into collision with an engine, tender, and waggon at Acton Bridge, and the latter ran back and overtook an express goods-train at Hartford Station	–	2	–	2	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–
29th September.—A passenger-train came into collision with a goods-train near Churwell	–	4	–	2	–	–	–	–	–	–	–	1	–	1	–	–	–	1	–	–	–
10th October.—An excursion-train came into collision with a goods-train, which had fouled its line at Bletchley	–	40	–	1	–	–	–	–	–	1	–	–	–	1	–	–	–	1	–	–	–
21st December.—An express-train ran into an ordinary passenger-train at St. Helens	–	8	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	1	–	–
23rd December.—A passenger-train came into collision with a goods-train at Burneside Station	–	4	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–

continued.

F.—*Collisions within fixed Signals at Stations or Sidings*—continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.	
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.														
LONDON-AND-SOUTH-WESTERN:																							
25th February.—A passenger-train came into collision with an overturned waggon near Nine Elms	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
13th November.—A passenger-train ran into a goods-truck which had fouled its line at Nine Elms	–	1	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–		
LONDON,-BRIGHTON,-AND-SOUTH-COAST:																							
29th January.—A passenger-train came into collision with a train of empty carriages at Victoria	–	21	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	1	–	1	–		
23rd December.—A passenger-train ran into a still-engine at the Victoria Station	–	3	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–		
MANCHESTER,-SHEFFIELD,-AND-LINCOLNSHIRE:																							
18th February.—A passenger-train ran into a light-engine at Ashbury Station	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–		
11th April.—A passenger-train overtook a coal train at Appleby	–	2	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	1	–		
MIDLAND (STAVELEY-COAL-AND-IRON-CO'S. RAILWAY):																							
26th February.—An engine ran into 27 empty waggons at Black Shale Sidings	–	–	2	1	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–		
MIDLAND:																							
1st March.—A passenger-train and a ballast train came into collision near Kirkstall	–	3	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–		
19th June.—Two passenger-trains came into collision at Sheffield	–	30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
5th September.—An express-goods-train came into collision with a train of empty waggons at Bedford	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
MONMOUTHSHIRE:																							
19th December.—A passenger-train ran into a coal train at Bassaleg	–	6	–	1	–	–	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–		
NORTH-BRITISH:																							
28th September.—One passenger-train ran into another near Waverley Station, Edinburgh	–	19	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	1	–	–	–		
20th December.—An up-goods-train came into collision with a down-coal-train at Cowdenbeath	–	–	–	4	–	–	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–		
NORTH-EASTERN:																							
28th September.—A mail train came into collision with some empty carriages at York	–	4	–	1	–	–	–	–	–	1	–	–	–	1	–	–	–	1	–	–	–		
NORTH-LONDON:																							
28th July.—A passenger-train came into collision with a goods-train at New Inn Yard Junction	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–	–		
NORTH-STAFFORDSHIRE:																							
17th August.—A passenger-train came into collision with a goods-train at Crewe Sidings	–	5	–	1	–	–	1	–	–	–	–	–	–	1	–	–	–	1	–	–	–		
NORTH-UNION:																							
25th January.—A London and North-western passenger-train ran into some London and North-western goods-waggons at Farington Station	–	9	–	2	–	–	–	–	–	–	–	1	–	–	–	1	1	1	–	–	–		
OLDHAM,-ASHTON,-AND-GUIDE-BRIDGE JUNCTION:																							
5th April.—A passenger-train overtook a goods-train near Clegg Street Station, Oldham	–	5	–	1	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–		
21st August.—A Manchester, Sheffield, and Lincolnshire passenger-train ran into a London and North-Western passenger-train at Clegg Street Station, Oldham	–	9	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–		
SOUTH-EASTERN:																							
29th July.—A passenger-train came into collision with a train of empty carriages at Hastings	–	17	–	2	–	–	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–		
TOTAL	20	561	6	41	1	1	1	–	–	16	3	15	–	17	–	7	16	41	5	2	–		

continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.											
	Passengers and others.		Servants of Company only.			Defective Maintenance of		Defective Construction of													
	Killed.	Injured.	Killed.	Injured.	Fracture or unloosening of Couplings.	Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under
G.—*Collisions between Engines or Trains meeting in opposite Directions.*																					
BELFAST-AND-NORTHERN-COUNTIES:																					
26th December.—A passenger-train and a special goods-train came into collision between Antrim and Dunadry Stations -	1	8	-	5	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	
SOMERSET-AND-DORSET:																					
7th August.—Two passenger-trains came into collision between Radstock and Wellow Stations - - - -	12	23	1	6	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	
TOTAL - - -	13	36	1	11	-	-	-	-	-	-	1	-	-	-	-	2	-	1	-	-	
H.—*Collisions at Level-Crossings of two Railways.*																					
PRESTON-AND-WYRE:																					
17th March.—A passenger-train ran into some waggons at the Wyre level-crossing	-	-	-	-	-	-	-	-	1	-	1	-	-	1	-	1	-	1	-	-	
I.—*Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-points.*																					
BELFAST-AND-NORTHERN-COUNTIES:																					
2nd October.—A passenger-train left the rails at Cookstown Junction - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	
CAMBRIAN:																					
12th December.—The engine of a passenger-train left the rails at Towyn - - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
GREAT-EASTERN:																					
4th March.—Part of a passenger-train left the rails at North Woolwich Station -	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
19th November.—The rear vehicle of a passenger-train left the rails at the Victoria Park Junction Station - -	-	3	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	1	-	-	
GREAT-SOUTHERN-AND-WESTERN:																					
24th April.—A passenger-train left the rails at Killarney Junction - - -	-	-	1	1	-	-	1	-	-	-	-	-	-	1	-	-	-	-	1	-	
GREAT WESTERN:																					
3rd June.—The engine and part of a passenger-train left the rails at Slough -	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	
2nd July.—The engine of a goods-train left the rails at Bathampton Junction -	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	
4th September.—A passenger-train ran into a siding and came into collision with some waggons at Durston - - - -	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	1	-	-	
GREAT-WESTERN (SOUTH-DEVON-AND-LAUNCESTON-LINE):																					
9th February.—Part of a passenger-train left the rails at Tavistock Station - -	-	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	
LANCASHIRE-AND-YORKSHIRE:																					
22nd March.—The break-van of a ballast-train left the rails at Ovenden Junction -	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
1st May.—A down-passenger-train was turned by a through road on to the up-line, and ran into a ballast-train at Halifax - - - - -	-	19	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	
2nd September.—Part of a passenger-train left the rails at Blackburn Junction, Accrington - - - - -	-	7	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	

continued.

I.—*Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-points*—continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
						Defective Maintenance of		Defective Construction of															
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under the Control of the Company.		
	Killed.	Injured.	Killed.	Injured.																			
LONDON-AND-NORTH-WESTERN:																							
28th January.—A bank-engine ran into a passenger-train near Tebay	–	–	1	10	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–		
10th June.—A passenger-train was turned into a siding and ran into a goods-train at Heaton Norris	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
18th September.—Part of a passenger-train left the rails at Wednesbury	–	2	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
14th November.—A passenger-train came into collision with a coal-train at Wolverton	–	12	–	6	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–		
27th December.—An up-passenger-train was turned into the goods-yard, and came into collision with a shunting-engine south of Primrose Hill Tunnel	–	12	–	1	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–	–		
LONDON-AND-NORTH-WESTERN AND GREAT-WESTERN JOINT:																							
28th January.—Part of a passenger-train left the rails at Hereford (Barrs Court)	–	1	–	–	–	–	–	–	–	1	–	–	–	1	–	1	–	1	–	–	–		
19th February.—Part of a passenger-train left the rails at Hereford	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
LONDON,-BRIGHTON,-AND-SOUTH-COAST:																							
19th May.—The engine of a Pullman-car-train left the rails at the Victoria Station	–	1	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
10th December.—A shunting-engine left the rails and fell through an under bridge at Norwood Junction	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–		
LONDON,-CHATHAM,-AND-DOVER:																							
13th October.—A passenger-train came into collision with an empty carriage at the Victoria Station	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
METROPOLITAN-AND-ST.-JOHN'S-WOOD:																							
9th December.—Two passenger-trains came into collision at St. John's Wood-Road Station	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–		
MIDLAND:																							
31st January.—An engine and three empty carriages left the rails at Derby Station	–	–	–	2	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
NORTH-BRITISH:																							
17th February.—Two vehicles in a passenger-train left the rails at Drem Junction	–	–	–	1	–	–	–	–	–	–	–	–	1	1	–	–	–	1	–	–	–		
NORTH-EASTERN:																							
4th February.—A passenger-train left the rails at Carlisle	–	2	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
5th February.—A passenger-train was split at facing-points near Holgate Junction, York	–	3	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
5th June.—Two passenger-trains came into collision at Newcastle	–	7	–	2	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
15th July.—The engine and two vehicles of a passenger-train left the rails at Burton Constable	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		
9th November.—A passenger-train was turned into the goods-yard at West Hartlepool and there came into collision with some empty timber-trucks	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–		
SUTHERLAND:																							
11th September.—A passenger-train came into collision with a special-train of empty sheep-trucks at Rogart	–	11	–	2	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–		
TAFF-VALE-AND-GREAT-WESTERN:																							
18th September.—Part of a passenger-train left the rails at Quakers Yard low-level Station	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–		
TOTAL	–	89	3	32	–	1	5	–	6	2	–	–	1	19	–	5	–	18	1	–	–		

continued.

NAME OF RAILWAY AND DESCRIPTION OF ACCIDENT.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																		
					Attributable to the Rolling Stock or the Works.					Attributable to the Management.													
	Passengers and others.		Servants of Company only.		Fracture or unloosening of Couplings.	Defective Maintenance of		Defective Construction of		Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break-Power.	Want of Communication between Guard and Engine-Driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking-Apparatus, or Want of Safety-Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph-Communication, or of Block-Telegraph-System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather.	Improper Interference by Persons not under
	Killed.	Injured.	Killed.	Injured.		Machinery of Train.	Road or Works.	Machinery of Train.	Road or Works.														
J.—*Accidents on Inclines.*																							
GREAT-WESTERN: 17th January.—Two runaway waggons ran into a passenger-train at Whitland Junction	–	2	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–		
LANCASHIRE UNION: 1st January.—Some empty waggons ran away and came into collision with an engine and van, and the latter ran away and came into collision with a mineral-train between Ince Moss and De Trafford	–	–	1	3	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–	–		
MIDLAND: 15th August.—Two disconnected parts of a goods-train came into collision, and a passenger-train ran into the débris at Ormside	–	2	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		
MIDLAND-GREAT-WESTERN: 16th September.—The end waggon and break-van of a goods-train ran back into a special-train of empty waggons at Killucan	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	1	–	–	–		
RHYMNEY-AND-GREAT-WESTERN (BARGOED-JOINT-RAILWAY): 1st March.—A mineral-train ran into some empty mineral-waggons at Bedlinog Colliery Junction	–	–	–	7	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–		
TOTAL	–	5	1	11	–	–	–	–	–	2	–	1	–	2	–	3	–	3	–	–	–		
M.—*Miscellaneous.*																							
LONDON-AND-NORTH-WESTERN-AND-GREAT-WESTERN-JOINT: 1st September.—A boy was run over and killed by a light-engine at Tranmere	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
TOTAL	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		

APPENDIX No. 2.

STRACT of the ACCIDENTS which have been reported upon by the Inspecting Officers of the Department during the year 1875.—Classified according to the Class of each Accident, and the Causes to which it may be attributed.

CLASS OF ACCIDENT AND NAME OF RAILWAY.	Number of Accidents.	SUFFERERS BY ACCIDENT.				CAUSES OF ACCIDENT.																
		Passengers and others.		Servants of Company.		Attributable to the Rolling Stock or the Works.					Attributable to the Management.											
		Killed.	Injured.	Killed.	Injured.	Fracture or unloosening of Couplings.	Defective Maintenance of Machinery of Train.	Defective Maintenance of Road or Works.	Defective Construction of Machinery of Train.	Defective Construction of Road or Works.	Insufficient or defective Accommodation for the Requirements of the Traffic.	Insufficient Establishment, inexperienced Servants, or too long Hours of Duty.	Insufficient Break Power.	Want of Communication between Guard and Engine-driver.	Defective Arrangements of Signals or Points, or Want of or defective Locking Apparatus, or Want of Safety Points, or Locking Bars or Bolts.	Want of Time-pieces.	Insufficient or inadequately enforced Regulations.	Defective System for securing Intervals between Trains, or Want of Telegraph Communication, or of Block Telegraph System.	Negligence, Want of Care, or Mistake of Officers or Servants.	Excessive Speed, having regard to Engine, or Road, or other Circumstances.	Foggy Weather, or Snow.	Improper Interference by Persons not under the Control of the Company.
CLASS OF ACCIDENT.																						
-Accidents from Engines or Vehicles meeting with or leaving the Rails in consequence of Obstructions or of Defects in connexion with the Permanent-way or Works	23	–	69	7	21	–	2	13	1	4	1	1	–	–	–	–	4	–	11	9	–	1
-Accidents from Boiler-explosions, or from Failures of Axles, Wheels, or Tyres, or from other defects in rolling-stock	12	–	33	5	17	2	3	–	4	–	–	–	–	1	–	–	2	–	4	–	–	–
-Accidents from Trains entering Stations at too great Speed	3	–	28	–	2	–	–	–	1	–	–	–	1	–	–	–	–	–	3	2	–	–
-Collisions between Engines and Trains following one another on the same Line of Rails, excepting at Junctions, Stations, or Sidings	3	–	39	–	7	–	1	–	–	–	–	1	1	–	–	1	–	1	3	–	–	–
-Collisions at Junctions	19	1	241	1	25	–	–	–	–	–	2	1	3	–	9	1	3	8	16	1	3	–
-Collisions, within fixed Signals, at Stations or Sidings	49	20	561	6	41	1	1	1	–	–	16	3	15	–	17	–	7	16	41	5	2	–
-Collisions between Engines or Trains meeting in opposite Directions	2	13	36	1	11	–	–	–	–	–	–	1	–	–	–	–	2	–	1	–	–	–
-Collisions at Level-Crossings of two Railways	1	–	–	–	–	–	–	–	–	1	–	1	–	–	1	–	1	–	1	–	–	–
-Accidents in consequence of Engines or Trains being wrongly turned into Sidings or otherwise through Facing-Points	32	–	89	3	32	–	1	5	–	6	2	–	–	1	19	–	5	–	18	1	–	–
-Accidents on Inclines	5	–	5	1	11	–	–	–	–	–	2	–	1	–	2	–	3	–	3	–	–	–
-Miscellaneous	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL	150	35	1101	24	167	3	8	19	6	11	23	8	21	2	48	2	27	25	101	18	5	1
NAME OF RAILWAY.	Length of Railway.																					
	Miles.																					
fast-and-Northern-Counties	150	2	1	8	–	5	–	–	–	–	–	–	–	–	–	–	2	–	1	–	–	–
edonian	829	8	–	67	–	5	–	2	–	1	–	–	2	–	2	–	1	4	6	1	–	–
mbrian	180	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
y-of-Glasgow-Union	6	1	–	6	–	1	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–
sgow-and-Paisley-Joint	*—	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
sgow-and-South-Western	317	3	–	1	4	9	–	1	–	1	–	–	1	–	–	–	1	1	2	–	–	–
sgow, Barrhead, and Kilmarnock	*—	1	–	48	–	3	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–
eat-Eastern	859	8	–	25	3	6	–	–	2	–	1	1	3	–	1	1	2	–	5	1	–	–
eat-Northern	640	6	17	184	2	13	–	1	–	–	–	–	1	2	2	1	–	1	4	–	–	–
eat-Northern and Manchester-Sheffield-and-Lincolnshire	*—	2	–	79	–	6	–	–	–	–	–	–	–	2	1	–	–	–	1	–	–	–
eat-Northern (Ireland)	458	2	–	8	–	–	–	–	–	1	–	1	–	–	–	–	–	–	1	1	–	–
eat-Southern-and-Western	485	1	–	–	1	1	–	–	1	–	–	–	–	–	1	–	–	–	–	1	–	–
eat-Western	2,059	19	–	58	4	10	1	1	6	2	3	7	1	–	–	5	–	2	1	10	7	1
eat-Western (Launceston-and-South-Devon)	*—	1	–	3	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–
eat-Western and London-and-South-Western-Joint	*—	1	–	22	–	1	–	–	–	–	–	–	–	1	–	–	–	–	–	1	1	–
ghland	402	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
ncashire-and-Yorkshire	439	11	3	104	2	12	1	–	1	–	–	3	1	1	–	4	–	3	2	10	–	–
ncashire-Union	*—	1	–	–	1	3	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	–
ndon-and-North-Western	1,632	17	–	109	2	29	–	1	1	–	1	3	1	4	–	6	–	3	4	15	2	–
ndon-and-North-Western and Great-Western	*—	3	1	1	–	–	–	–	–	–	–	1	–	–	–	2	–	1	–	1	–	–
ndon-and-South-Western	687	4	–	6	–	1	–	–	–	1	–	1	–	–	–	–	–	–	–	2	–	1
ndon-Brighton-and-South-Coast	349	7	–	51	–	4	–	1	2	–	1	2	–	–	–	2	–	–	–	4	1	1
ndon-Chatham-and-Dover	159	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
ndon-Tilbury-and-Southend	45	1	–	20	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
nchester-Sheffield-and-Lincolnshire	260	3	–	15	–	2	–	–	–	–	–	–	–	1	–	–	–	2	2	1	1	–
nchester South-Junction-and-Altrincham	9	2	–	6	1	1	–	–	–	–	–	–	–	–	–	–	1	1	2	–	–	–
tropolitan	14	1	–	36	–	6	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–
tropolitan-and-St.-John'sWood	*—	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–
tropolitan-District	8	2	1	48	–	5	–	–	–	–	–	–	1	–	2	–	1	1	1	–	1	–
dland	1,238	9	–	48	2	9	–	–	2	–	–	1	–	1	1	–	1	1	5	–	–	–
dland-Great-Western	415	1	–	1	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	–	–	–
d-Wales	48	1	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	1	–	–
nmouthshire	*—	1	–	6	–	1	–	–	–	–	–	–	–	–	1	–	–	1	1	–	–	–
rth-British	851	4	–	32	–	6	1	–	–	–	–	1	–	1	1	2	–	1	4	–	–	–
rth-Eastern	1,429	11	–	24	1	7	–	1	1	–	2	1	–	–	–	6	1	1	6	1	–	–
rth-London	12	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	1	–	–	–
rth-Staffordshire	195	1	–	5	–	1	–	–	1	–	–	–	–	–	–	1	–	–	1	–	–	–
rth-Union	*—	1	–	9	–	2	–	–	–	–	–	–	–	1	–	–	1	1	1	–	–	–
dham-Ashton-and-Guide-Bridge-Junction	6	2	–	14	–	1	–	–	–	–	–	–	–	1	–	1	–	2	1	–	–	–
eston-and-Wyre	*—	1	–	–	–	–	–	–	–	1	–	1	–	–	1	–	1	–	1	–	–	–
nymney-and-Great-Western (Bargoed-Joint-Line)	9	1	–	–	–	7	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–
merset-and-Dorset	92	1	12	28	1	6	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–
uth-Eastern	331	1	–	17	–	2	–	–	–	–	–	–	1	–	–	–	–	1	1	–	–	–
therland	*—	1	–	11	–	2	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–
ff-Vale-and-Great-Western	*—	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–
TOTAL	14,613	150	35	1101	24	167	3	8	19	6	11	23	8	21	2	48	2	27	25	101	18	5	1

* The length of each of these railways is included in the mileage of the company or companies to whom it belongs.

APPENDIX No. 3.

SUMMARY of PERSONS returned as KILLED or INJURED on the Railways of the UNITED KINGDOM, during the Year ending 31st December 1876, from the Various Causes specified.

| | PASSENGERS. | | | | | | | | | | | | | | | | SERVANTS. | | | | | | | | | | | | | | | |

APPENDIX No. 4.

SUMMARY of CASUALTIES to TRAINS, ROLLING STOCK, PERMANENT WAY, &c., which have been reported to the BOARD OF TRADE on the Railways in the UNITED KINGDOM, during the Year ending 31st December 1876, with the Number of Persons killed or injured, including those which have not been inquired into by the BOARD OF TRADE.

	ENGLAND AND WALES.							SCOTLAND.							IRELAND.							TOTAL, UNITED KINGDOM.						
	No.	Number of Passengers and Others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and Others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and Others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and Others.		Number of Servants.		Total all Classes.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Collisions between passenger-trains or parts of passenger-trains	52	27	431	1	36	28	467	4	–	73	–	3	–	76	1	–	6	–	–	–	6	57	27	510	1	39	28	549
Collisions between passenger-trains and goods or mineral trains, engines, and vehicles standing foul of the line	109	7	406	2	42	9	448	19	–	84	–	8	–	92	1	1	8	–	5	1	13	129	8	498	2	55	10	553
Collisions between goods-trains or parts of goods-trains	52	–	4	6	43	6	47	3	–	–	–	5	–	5	2	–	1	–	1	–	2	57	–	5	6	49	6	54
Collisions between two engines	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Passenger-trains or parts of passenger-trains leaving the rails	99	–	98	7	22	7	120	18	–	4	–	1	–	5	7	–	–	1	2	1	2	124	–	102	8	25	8	127
Goods-trains or parts of goods-trains, engines, &c. leaving the rails	39	–	–	1	11	1	11	5	–	–	1	–	1	–	3	–	–	–	3	–	3	47	–	–	2	14	2	14
Trains or engines travelling in the wrong direction through points	28	–	24	–	6	–	30	4	–	–	–	–	–	–	–	–	–	–	–	–	–	32	–	24	–	6	–	30
Trains running into stations or sidings at too high a speed	20	1	56	–	2	1	58	4	–	8	–	–	–	8	–	–	–	–	–	–	–	24	1	64	–	2	1	66
Trains running over or against cattle or other obstructions on the line	170	–	5	1	5	1	10	31	–	–	–	2	–	2	5	–	–	–	–	–	–	206	–	5	1	7	1	12
Trains running through gates at level-crossings	67	–	1	2	2	2	3	–	–	–	–	–	–	–	1	–	–	–	2	–	2	68	–	1	2	4	2	5
The failure of boilers or tubes, &c. of engines	11	–	–	1	11	1	11	1	–	–	4	9	4	9	1	–	–	–	–	–	–	13	–	–	5	20	5	20
The failure of machinery, springs, &c. of engines	9	1	10	–	1	1	11	2	–	–	–	–	–	–	1	–	–	–	–	–	–	12	1	10	–	1	1	11
„ „ tyres	845	–	1	–	1	–	2	32	–	–	–	–	–	–	3	–	–	–	–	–	–	880	–	1	–	1	–	2
„ „ wheels	73	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	74	–	–	–	–	–	–
„ „ axles	313	–	7	–	4	–	11	73	–	–	–	1	–	1	11	–	3	–	–	–	3	397	–	10	–	5	–	15
„ „ break apparatus	4	–	1	–	3	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	1	–	3	–	4
„ „ couplings	20	–	3	1	1	1	4	9	–	13	–	3	–	16	1	–	–	–	–	–	–	30	–	16	1	4	1	20
„ „ ropes used in working inclines	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
„ „ tunnels, bridges, viaducts, culverts, &c.	5	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	7	–	–	–	–	–	–
Broken rails	352	–	–	–	–	–	–	109	–	–	–	–	–	–	3	–	–	–	–	–	–	464	–	–	–	–	–	–
The flooding of portions of permanent-way	10	–	–	–	–	–	–	9	–	–	–	–	–	–	3	–	–	–	–	–	–	22	–	–	–	–	–	–
Slips in cuttings or embankments	11	–	–	–	–	–	–	6	–	–	–	–	–	–	2	–	–	–	–	–	–	19	–	–	–	–	–	–
Fire in trains	9	–	–	–	–	–	–	14	–	–	–	–	–	–	–	–	–	–	–	–	–	23	–	–	–	–	–	–
Fire at stations, or involving injury to bridge or viaducts	1	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–
Other accidents	13	–	2	–	–	–	2	4	–	1	–	1	–	2	–	–	–	–	–	–	–	17	–	3	–	1	–	4
	–	36*	1049*	22	190	58	1239	–	–	183	5	33	5	216	–	1	18	1	13	2	31	–	37*	1250*	28	236	65	1486

* Including 1 person killed and 5 persons injured who were not passengers.

APPENDIX No. 5.

INTER-COMMUNICATION IN RAILWAY TRAINS.

Board of Trade (Railway Department),
18th July 1877.

SIR,

WITH reference to your letter of the 13th January last on the subject of the electrical communication between passengers and guards, arranged by Messrs. Stroudley and Rusbridge, and introduced on the London-Brighton-and-South-Coast Railway, I am directed by the Board of Trade to transmit the enclosed copy of a Report by Captain Tyler, and to inform you that the Board of Trade, as required by the Act 31 & 32 Vict. cap. 119. sec. 22 (Regulation of Railways Act, 1868), approve of the electrical communication in question in the place of the systems on your line previously sanctioned by them

I am, &c.,

(Signed) HENRY G. CALCRAFT.

The General Manager,
London-Brighton-and-
South-Coast Railway.

To the Secretary, Railway Department, Board of Trade.

Wyvenhoe,
15th May 1877.

SIR,

IN compliance with your instructions, I have now the honour to report, for the information of the Board of Trade, the result of my inspections and tests of the system of electrical communications between passengers and guards applied to certain trains of the London-Brighton-and-South-Coast Railway Company.

This system of electrical train communication has been arranged by Messrs. Stroudley and Rusbridge. A Leclanché battery, containing a few cells in a convenient form, is placed beneath the alarm-bell in a wooden case fitted to the van by brackets, and this case is attached and removed at pleasure in the same manner as an ordinary signal-lamp. The mouth of each battery-cell is sealed or closed, so that the contents cannot overflow. A battery of this description will work for several months without attention, and will indicate any decline in its strength by a gradual diminution in the sounds of the alarm-bells. Its strength can also be tested at any time by means of a galvanometer, and when the minimum strength is reached there need be no risk of the batteries being too weak to perform the necessary duty.

Communication is effected by means of a wire passed under the floors of the carriages, brought up the partitions between the compartments, attached to two fixed brass brackets, one for each compartment, and thus connected with the key or knob mechanism by the pulling of which the passengers ring the bells in the vans. This knob by remaining out indicates the compartment from which a signal has been given; the passengers cannot replace it after once pulling it out; and the bells continue to ring until the guard has replaced it by means of a special key. The connexion between the two carriages is made by means of two elastic india-rubber-covered coils of wire, having hoop-couplings at the ends, which couplings are made with knife edges, so that the vibration of the moving train keeps the contact-surfaces bright and clean. These couplings are attached to the fixed brackets on the carriages, which are soldered to the wires before mentioned, and are placed about 18 inches above the main couplings, and in the centre of the carriages, where, when not in use, they can be attached to other hooks in vertical positions. In case any extra carriage has to be attached to a train, it is only necessary, after the main couplings have been screwed up and the side chains attached in the usual manner, for the porter or guard to hook the ends of the elastic couplings together. The connexion is then complete and ready for use.

When it is necessary to detach part of a train in motion, the elastic coupling before mentioned is provided with a slip-claw in lieu of the ordinary hook. The guard can then, by pulling a small cord which passes through the electrical coupling into the van, detach the electrical coupling before pulling the trigger-cord of the traction coupling.

The whole of the details of this system have been carefully worked out, and constructed in the simplest form, so that the fixed parts may, as far as possible, be portions of the carriage, and the working parts may be easily detached. The whole of the parts are interchangeable, and any of them can be replaced, if damaged, in two or three minutes.

To complete the electrical circuits through the wheels and rails, and for the passage of the return-currents when a train becomes divided, the wood-wheels of the carriages have metallic connexions between the tyres and bosses.

A knob is placed in each of the bell-cases in the vans, so that the guards may communicate with each other by code, and a small slip-catch is provided which will cause the bell to ring continuously when any danger is apprehended.

It had, I found, been considered better in designing this communication to restrict this connexion to the guards and passengers, and to leave the guards to judge as to the advisability of stopping the train. To enable the front guard to communicate with the engine-driver a small bell was fixed within the cab on the engine close to the engine-driver, to be rung by means of a cord leading through a hole in the front van. The guard could thus at once attract the attention of the engine-driver when necessary.

When there is only one guard at the tail of a train, the same apparatus as is provided for each van requires to be fixed on the engine. It appears to me to be better in all cases that the engines should carry alarm bells as well as the vans, and that when a warning signal is made in any part of a train, it should thus be at once communicated to the engine-driver and to each guard.

This system has been in use on the Brighton railway in one of their express trains for nearly four years, and it has not been found necessary to alter any of the details or to change it in any way. 208 vehicles are already fitted with the apparatus, and 7 trains are at present working with this mode of communication.

A train which I inspected on the 1st March is now in use on the Brighton Company's Crystal-Palace railway, consisting of 6 composite, a first-class, a second-class, and 3 third-class carriages, and 2 third-class brake-carriages. I found this train standing in the Victoria station, fitted throughout with the electrical communication, which was tested from the several carriages and between the guard's vans with successful results.

I also had an opportunity of trying the system on a journey to Brighton and back in a special train on the same day, when the President of the Board of Trade visited the Brighton line, accompanied by Mr. Knight, general manager, Mr. Stroudley, locomotive superintendent, Mr. Williams, traffic superintendent, and other officials of the Company. On the journey down to Brighton in this special train, three signals were made from the saloon-carriage to the guard, viz., between Balham and Streatham-junction, between Streatham-junction and Thornton-Heath, and between Horley and Three-Bridges.

These signals were duly received by the guard, who was instructed, on looking-out, by a white flag-signal from the saloon-carriage not to stop the train.

On the return journey from Brighton signals were made from the saloon between Burgess-Hill and Haywards-Heath and between Haywards-Heath and Balcombe, in both of which instances the white flag was exhibited from the carriage for the train to continue; but between Stoats-Nest and Caterham-junction, on a signal from the saloon, the train, which was running at a speed of 57 miles per hour, pulled up on the application of the ordinary brakes in about 30 seconds. This train was formed of 3 saloon-carriages, 2 first-class carriages, and 2 brake-vans, and the experiments made on the down and the up-journeys were in every case successful.

This special train was also furnished with electrical speaking communication between one of the saloon-carriages and the engine-tender. An ordinary speaking-

instrument was fitted up in the end compartment of the saloon, in charge of a telegraph-clerk, and a wire laid from this compartment along the top of the carriages to the tender of the engine, was connected with another speaking-instrument also in charge of a clerk on the tender. 19 messages were by this means sent between the saloon-carriage and the tender throughout the journey to Brighton and back. The questions asked and the replies given were upon various subjects, viz., as to the speed of the train, &c. These messages were given and answered with great expedition, the time occupied in giving the messages and receiving the answers averaging only from 1 to 2 minutes. In order that the engine-driver's attention should not in any way be diverted, an inspector was on the tender, who received and replied to the messages.

This is, I believe, the first occasion on which speaking communication by electricity has been carried on between an engine and a carriage in a railway train. The idea of furnishing certain special trains with such telegraph speaking communication suggested itself to Mr. Knight some time since, when, in travelling about the line on his inspections, he wished to communicate with the inspector riding on the engine. It is not of course intended to furnish the speaking communication for ordinary passenger-trains.

I also attended on Thursday, 12th April, at Brighton, where I was met by Mr. Knight, the General Manager, and other chief officers of the Company, for the purpose of making further experiments in a train of a mixed or miscellaneous character, and of extreme length, the number of vehicles being in excess of the heaviest passenger-train used in ordinary working; and also to try the working of this system of inter-communication in the practical operations of shunting, and attaching and detaching vehicles at various stations.

Accordingly, a train was formed in two parts, provided with the apparatus for detaching one portion of it, in speed, on the journey; and it consisted of the following vehicles, marshalled in the under-mentioned order:—

First portion (18 vehicles).	Second portion (8 vehicles).
Brake-van.	Brake-van.
First-class carriage.	Carriage-truck.
Saloon do.	Horse-box.
Do. do.	Second-class carriage.
First-class do.	Do.
Horse-box.	First-class carriage.
Do.	Do.
Covered-carriage-truck.	Brake-van.
Horse-box.	
Do.	
Carriage-truck.	
Do.	
Do.	
Do.	
Do.	
Horse-box.	
Do.	
Brake-van.	

This train, which was thus composed in all of 26 vehicles, left the Brighton-station for a trip to London, and the following is a statement showing the number of signals made by means of the electrical communication on the journey:—

Signals received in rear van of second portion of train.

Passing Preston, bell rung by front guard.
" " a passenger.
" " front guard.
Entering Clayton tunnel, two rings from passengers.
Approaching Hassock's-Gate, one ring from front guard for breaks.

Signals received in rear van of first portion from.

Keymer-junction, bell rung from front guard to stop.
Between Keymer-junction and Balcombe, two rings from guard.
Approaching Three-Bridges, bell rung for slipping second portion.
Approaching Horley, bell rung from front guard to stop.
Redhill-junction, bell rung from passenger.
Caterham " "
Sydenham " "
Brockley "
Near London Bridge "
Entering London Bridge-station, signal from front guard to stop.

Number of signals from passengers to guards - - - - -	8
Number of signals between guard and guard - - - -	9
Total number of communications made - - -	17

In every case these signals were perfectly made, and were understood by all concerned.

The first stoppage of this special train was made at Hassock's-Gate, at which station a horse-box and carriage-truck were attached to the train immediately behind the front brake-van of the second portion. The electrical communication had to be disconnected for this operation of shunting, and upon the train being brought together again, it was immediately restored by means of the elastic couplings, which were connected by the porter attaching the vehicles.

A similar trial was made at Burgess-Hill, where a horse-box and carriage-truck were attached immediately in front of the rear guard's-van of the first part of the train, thus making the train up to 30 vehicles.

Both the foregoing experiments were successful, and so far proved that a train fitted with this system of electrical communication could be divided and joined again without in any way impairing the effectual working of the apparatus.

As it was arranged that the second portion of the train, consisting at this stage of the journey of 10 vehicles, should be detached in speed at Three-Bridges, I rode in the rear guard's-van of the first portion from Balcombe, and from that vehicle I had an opportunity of seeing the operation of disconnecting the electrical apparatus by means of the slip coupling already described, which was successfully done.

Having regard to the foregoing satisfactory trials, I am of opinion that the Board of Trade may properly sanction the adoption of this electrical system in the trains of the London-Brighton-and-South-Coast Railway Company in lieu of the present cord communication.

I may add that Mr. Knight, the general manager, informed me, that subject to the approval of this system by the Board of Trade, his directors had given orders that the whole of their passenger-train vehicles were to be fitted with this electrical communication; and further, that it is their intention to have this system of communication fitted to all trains running on the London-Brighton-and-South-Coast Railway, irrespective of distance, so that it may form part of the ordinary system of working the passenger traffic. When it is in full operation the starting-signal will be given by the guard or guards by means of this communication, and this will ensure the apparatus being properly tested as to efficiency before the train commences its journey.

I beg to forward specification and drawings of this system of communication, also copies of the special notices and instructions issued for the working of the trains herein referred to, viz., 1st March and 12th April 1877.

I have the honour to be,
Sir,
Your obedient servant,
H. W. Tyler.

LONDON:
Printed by George E. Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty.
For Her Majesty's Stationery Office.

REPORTS

OF THE

INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT

TO THE BOARD OF TRADE,

UPON

CERTAIN ACCIDENTS

WHICH HAVE

OCCURRED ON RAILWAYS

During the Months of July, August, and September,

1876.

(PART SIXTH.)

Presented to both Houses of Parliament by Command of Her Majesty.
February 1877.



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PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
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CALEDONIAN RAILWAY.

Board of Trade,
(Railway Department,)
Whitehall, 16th September 1876.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the Order of the 22nd ultimo, the result of my inquiry into the circumstances connected with the collision which occurred on the 19th ultimo at Rutherglen station on the Caledonian Railway.

In this case the 5.30 p.m. passenger train from the South Side station, Glasgow, for Hamilton, was, while standing at Rutherglen station, run into by the 4.30 p.m. passenger train from Greenock for Coatbridge, also having to stop at Rutherglen station.

Five passengers have complained of slight injury; no servants of the Company were injured.

No damage of any consequence was sustained by the rolling stock, nor were any wheels thrown off the rails.

Rutherglen station is approached from Gushetfaulds junction (where the lines from South Side station and Greenock unite) on falling gradients of 1 in 1,650, and 1 in 304. As regards up trains the station is protected by an up distant and up home signal, the former being 650 yards, and the latter 60 yards from a signal cabin at the junction of the Dalmarnock Colliery Branch, which runs in close to the up end of the platforms. The up distant-signal is visible for some distance back, but is lost sight of in consequence of a short tunnel, and is again seen about 70 yards off; the up home-signal, and a train standing at the Rutherglen up platform, being both visible from the up distant-signal.

Arrangements for working the block system are in progress, but not yet completed, from the South Side station to Rutherglen; beyond it to Coatbridge, &c., the block system is in operation.

The evidence in this case is as follows:—

1. *John Hilton*, driver 17 years.—I was in charge of the 5.30 p.m. passenger train from South Side to Hamilton; the train consisted of engine and tender and 10 vehicles. We left a minute late, and arrived a minute late at Rutherglen at 5.37, not having been checked by signal on the way. We had been standing at the platform about a minute, the home-signal being off when we arrived, when we were run into. I heard no whistle before this, and no one told me to look out or move ahead. I was simply waiting till the train was ready to start. The collision knocked us forward about half an engine's length. No damage was done to the train. My break was off, ready to start.

2. *John Fleming*, fireman 4 years.—I agree with the driver's evidence.

3. *Robert Hunter*, guard 3 years.—The 5.30 p.m. train consisted of 10 vehicles, including two break-carriages, one in front and one in rear. I was in the rear compartment—the only guard. We started a minute late, and arrived at Rutherglen at 5.37 p.m. I was on the platform when the collision occurred, about a minute after we had arrived. We were almost ready to start. I did not see the 4.30 p.m. train come up, being busily engaged. No one shouted or called attention to it that I heard. The collision occurred at 5.38. We were not checked anywhere between South Side and Rutherglen. I did not know that the Greenock train was behind us.

4. *William Buchan*, guard 3 years. — I left Greenock at 4.33 p.m., 3 minutes late, waiting for the mail bags; the train, when it left Greenock, consisted of 17 vehicles, including a break compartment, 2 break-vans, and 3 guards. We left Shields junction 12 minutes late, having lost 9 minutes at Paisley attaching 3 vehicles from Wemyss Bay for Edinburgh; from Shields junction the train consisted of 9 vehicles, including 2 break-vans and one guard, viz., myself, in the rear of the train. I was looking out as we came along, and saw no signals against us until we came in sight of the up distant-signal from Rutherglen, which was at danger. The driver passed this signal more slowly than usual for merely stopping at Rutherglen. I applied my break as I was passing Shawfield cabin after seeing the distant-signal at danger. I usually apply my break in the tunnel or on the Rutherglen side of it for merely stopping at the station. We were about two trains' length past the tunnel's mouth when I saw the other train standing at the station. I could do no more, as my break was then on. I did not hear my driver whistle except for the distant-signal. I thought we should have stopped before striking the other train, but we hit it at a speed of 4 or 5 miles an hour. The rails were dry. I work with this train daily every eighth week. We are very rarely behind the 5.30 p.m. train.

5. *James Louden*, driver 13 years.—I joined the 4.30 p.m. train from Greenock at Shields junction. My engine was a 4-coupled engine, 7-ft. driving and trailing wheels, and a 6-wheeled tender. No breaks on the engine wheels. The train consisted of 9 vehicles on leaving Shields junction. We started 12 minutes late, having first to stop at Rutherglen. I saw no signals whatever against me till I came in sight of the Rutherglen up distant-signal, which I saw at danger from Shawfield cabin, about 500 yards off, steam and smoke having prevented my seeing it sooner on this occasion. I shut off steam on seeing this, my speed being then 25 miles an hour. I should not have shut off steam so soon but for this signal being at danger. I told the fireman to put on his break, and whistled for the distant-signal. It was not taken off, and I passed it at a speed of 13 to 15 miles an hour. I did not see the 5.30 p.m. train standing at the platform, having been deceived by seeing the home-signal beyond it standing off. I was then engaged on the footplate, oiling, and did not see the train till I was within 100 yards of it, when my speed was 5 or 6 miles an hour. I then reversed, but had not time to get steam fully on when I struck the train. Neither I nor my fireman jumped. We never moved after striking. I thought we were in front of the 5.30 p.m. train. On seeing the home-signal clear I told the fireman to release his break and draw into the platform. I do not think I should have overrun the platform had I not struck the train.

6. *Robert Minto*, fireman 18 months.—I saw no signal against us, and am not aware my driver did, from the time we left Shields junction till we saw the Rutherglen distant-signal at danger, and this I saw near the tunnel. The driver whistled and shut off his steam, and I applied my break. I kept it on till my driver told me to take it off after coming through the tunnel, as he said the home-signal was standing clear. I accordingly took it off. I saw the other train (but could not tell at first which road it was on); after passing the distant-signal the driver was oiling on the footplate; and I did not see that the other train was on our own line till about a train's length off it. I at once put on my break again. Our speed was then 4 miles an hour. I had only travelled this road twice before.

7. *Thomas Whiteside*, pointsman 5 years. — I came on duty at Shawfield at 7 a.m. We do not work block system at present. I book passing trains. I booked the 5.30 p.m. train as passing at 5.36. I did not put up my signals after this train, as the road was clear into Rutherglen station, and I thought the Rutherglen signals would have protected it. My in-

structions are to put my signals on after a train has passed. The 4.30 p.m. train passed at 5.38. I gave it a caution with a green hand-signal. I cannot say whether the driver saw it; he passed my cabin at from 20 to 25 miles an hour.

8. *Archibald Allison*, signalman 3 years. — The 5.30 p.m. train arrived at Rutherglen at 5.36. I had my home-signal off when the train arrived; but it had not started—though the guard had whistled—when the 4.30 p.m. train ran into it at 5.39. I did not think there would have been a collision from what I saw.

This collision was brought about by two causes:

1st. By the driver of the 4.30 p.m. train running very fast—13 to 15 miles an hour by his own acknowledgment—past a distant-signal at danger, and then failing to keep a proper look-out on approaching Rutherglen platform, where, had he not been (inopportunely) occupied in oiling his machinery, he must have seen the 5.30 p.m. train standing, in ample time to have stopped.

2nd. By the signalman at Shawfield cabin failing to keep his signals up against the driver of the 4.30 p.m. train, though by his own acknowledgment the 5.30 p.m. train had passed his cabin only two minutes previously, and contenting himself with giving only a caution signal with a green flag, which all the servants of the Company with the 4.30 p.m. train deny having seen.

It is satisfactory to learn that the block system, which will be a remedy for collisions of a similar character to the present, will be shortly in force on this section of the line.

The collision would probably have been prevented had the 4.30 p.m. train been fitted with continuous breaks under the driver's control.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the Company on the 30th September.

CALEDONIAN RAILWAY.

St. Andrew, N.B.,
13th September, 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in obedience to the Order of the 28th ultimo, the result of my inquiry into the circumstances which attended a collision that occurred on the 24th ultimo, on the Perth and Dundee branch of the Caledonian Railway, between a passenger and a goods train.

The company's return of the collision states that three passengers complained of having been shaken, and that the engine of the passenger train and two waggons in the goods train were considerably damaged.

The Caledonian Railway Company are engaged at the present time in completing the necessary arrangements for working this section of their line on the absolute block system, with the assistance of the electric telegraph, and this system is expected to be in operation in the course of two months. But at present the Perth and Dundee branch is almost entirely worked on the interval of time system.

For carrying into effect the working under the absolute block system, the company have established a signal-box at Barnhill, about one mile from Perth and 2¼ miles from Kinfauns, the first station on the branch east of Perth, where the tickets from the up trains are at present collected.

The approach to Barnhill from the direction of Kinfauns and Dundee is protected by up home and distant signals, the latter placed about 560 yards from the signal-box. Owing to the nature of the ground and the line being on a curve to the right of 38 chains radius, the distant-signal can only be seen at a distance of 372 yards, and the van of a goods train standing about 30 yards outside of the distant-signal would not be seen at a greater distance than 312 yards. The line is on an easy rising gradient as the distant-signal is approached.

The evidence of the company's servants respecting this collision is as follows:—

David Green, engine-driver, at intervals for about two years, and 12 or 13 years in the service of the company, states, "that he was in charge of engine "No. 344, attached to the 1.0 o'clock up goods train "from Dundee to Perth on the 24th August: that "he came on duty at 3.10 a.m. that day, and got "the engine ready for taking out the 4.30 a.m. goods "train for Dundee, and shunted it in the goods yard: "he then went to Princes Street station to take "water when on his way to Dundee with a train, and "then went to Dundee, and got there about 6.20 a.m.: "he next left Dundee with a local goods train at "7.50 a.m. for Perth, and was due there at 9.45 a.m., "and reached that station at 10.0 a.m., having lost "15 minutes by extra shunting at roadside stations: "that after having shunted the train he went to the "running-shed shops to turn the engine, and on that "day the town's water was shut off, and there was "no water round about, and in consequence he had "to proceed to Almond Valley junction (1½ mile) "for water: that he got back to Perth at the goods "yard at 11.40, and he had then to shunt another "train for Dundee which was due to leave at "11.0 a.m.: that he left the goods yard for Dundee "at 11.50 a.m. with a goods train, and got to Dundee "at 1.35 p.m.: he had then to shunt the train, and "get water and turn the engine again, and he was "ready to take out the 1.0 p.m. up goods train about "2.15 p.m.: that he left Dundee at 2.45, and "arrived at Nine Wells junction at 2.55, and left "Nine Wells at 3.10: then he got to Inchture at "3.45, and left at 4.0 p.m.: that he reached Errol at "4.15 p.m., and left at 4.25, and passed Glencairn at "4.39; and as he approached Barnhill, the signals "were on against him, both the distant and home "signals. That the bushes of the connecting-rod had "become heated: that he passed the distant-signal "at danger, and was in the act of stepping down off "the engine when the home-signal was taken off for "him to proceed: that the bushes of the connect-"ing-rod were heating while he was at Errol, both "on the up and down journey, and he had to stop "between Inchture and Errol on that account: that "the metal was grinding in the bush when he stopped "at Barnhill: that he put some oil in, and he tried "to start again, but the steam was low in the boiler, "and he was unable to start: that he had oiled the "bushes of the engine at Errol station, and was "putting in oil as he approached Barnhill: that the "engine was in the shops the day before, and new "bushes were then put in: that the want of steam "was due to the badness of the coal: that he denies "that he was at all under the influence of drink when "he got to Barnhill, and says that he had not taken "spirits of any kind, nor beer, on that day, and was "perfectly sober: that he stopped his train at 5.2,

" and the passenger-train ran into his train at 5.7 p.m.: " that the van of his train was broken and thrown " off the rails, and three trucks were also thrown off the " rails, and one of them was broken: that after the " collision had occurred he damped down the fire, " and drew it back towards the door, and the train " was taken on to Perth by another engine coupled " on in front of his engine, but both engines were " working: that he was on the engine from 2.15 to " 2.45 at Dundee, but he did not report to the " foreman that he had been stopped by heated bushes " in going to Dundee, and did not consider it of " sufficient importance to make a report on the sub- " ject: that the fireman did not appear to be under " the influence of drink when they left Dundee at " 2.45 p.m., but he thought he was so when about " passing Glencairn station: he was away about " 15 minutes from the engine at Dundee."

William Brodie, 23 years of age, spare breaksman for 9 or 10 months, and for 18 or 19 months in the service of the Caledonian Railway Company, states, " that he was acting as a breaksman to the 1.0 p.m. " up goods train from Dundee to Perth on the 24th " August: that they had 25 loaded and 12 empty " trucks and 1 break-van, with an engine and tender, " and that they left Dundee at 2.45 p.m: that they " were waiting at Dundee for the engine which had " previously taken a train from Perth to Dundee, and " which got to Dundee at 2.5 p.m.: that his train " was due at Perth at 3.0.: that they stopped at " Nine Wells junction to take on waggons, and to " allow the 3.3 up mail train to pass: that they left " Nine Wells junction at 3.10 p.m., and shunted at " Inchture station to allow the 3.10 up express " goods train to pass: that they reached Errol at " 4.15 p.m., put off three waggons, and left at " 4.25 p.m.: that they arrived at Kilfauns station at " 4.45, and they next stopped at the distant-signal " at Barnhill: that he was on the look-out as they " approached Barnhill, and observed that the distant- " signal was down when he first saw it to let them " pass, and the home-signal was clear, but they " stopped for want of steam: that they had been " losing time after leaving Dundee, and when they " stopped he went forward half the length of the " train, and then he signalled to the driver to go on: " that the driver moved the regulator hand, but the " train did not move: that he did not lose any time " after his train came to a stand before he went " forward: that when he was going up to the " engine after his train had come to a stand-still, the " pointsman at Barnhill box came to the engine and " waved his hand, by which he understood he was to " go back: that he had no signal-flags nor fog- " signals, and could not get them: that he applied " to no one for them, and did not know where to go " for them: that he had no watch: that he has " never had detonators during the 9 or 10 months " during which time he has acted as spare breaksman: " that he did not know that any other train was " following so close upon his train as the one that " ran into his train, and that was his reason for not " having gone back immediately his train stopped: " that when he found that his driver did not go on " with the train: he then proceeded to go back to " protect the tail of his train, and he had got back " about 150 yards beyond his break-van when the " passenger train arrived and passed him: that he " could not say at what rate the passenger train was " running when it passed him, but thinks the steam " was off on the passenger train engine: that he " heard the passenger train engine whistle as it was " coming forward before it passed him: that it was " a whistle for the signal and also for the breaks: " that the Barnhill distant-signal was on at danger " at the time, as it was put on when the engine of " his train had passed it: that the leading wheels " of the passenger train engine were thrown off the " rails, and three trucks and the break-van of the " goods train were also thrown off the rails: that " neither the tender nor any carriages in the pas- " senger train were thrown off the rails: that he " had gone previously with similar trains without " hand signal-flags: that when he had got back he " thinks the driver of the passenger train engine saw " him, as he held up his arms in accordance with Rule " No. 28: that he spoke to the driver of the goods " train before leaving Dundee, and told him what to " put off at the various stations, and had no reason " to think that he was under the influence of drink: " that he saw the fireman also, but did not speak " to him, and was not near enough to observe the " condition he was in: that he did not observe any- " thing peculiar about the driver or fireman until " he was leaving Errol station; but at that time he " thought the driver was the worse for drink: he " did not observe the fireman, and did not make any " remark to the driver as to the state in which he was: " that the driver asked where was the next stopping " place, and he told him Perth: that he called out " to the station-master at Errol, who was standing " near by, 'I don't think that man is all right:' " that he told the driver to go on: that he does not " know whether the station-master (at Errol) heard " him or not: that the train was in motion when he " observed the state the driver was in, and when he " called out to the station-master: that he did not " see the driver of his train after the collision had " occurred."

Arthur Hutchinson, signalman at Barnhill box, 12 years a signalman, states, "that the 1.0 p.m. up " goods train reached Barnhill and stopped at 5h.2m.: " that the distant and home signals were both at danger " as it approached, and the train passed the distant- " signal at danger: that he never heard the driver " whistle, but he took off the home-signal before the " train stopped: that after the train stopped he " noticed the guard coming towards the engine, which " was about 300 yards from his box, and he left the " cabin and went to meet the guard, and cried out to " him to go back, to protect his train, and he went " back immediately: that he had passed the engine " when he called out to the guard to go back, and then " he returned to the engine and asked the driver to " draw further inside the distant-signal: that he tried " to do so several times but failed to move, and he had " no steam: that he did not say there was anything " the matter with his engine: that he passed close to " the engine, and did not have any conversation with " the driver, but thought he was the worse for drink: " that he was on the foot-plate of the engine not doing " anything in particular; shortly after he heard the " whistle of the passenger train engine for the breaks, " and the collision occurred about 5.10 p.m.: that he " thought the passenger train might have been travel- " ling at 10 or 12 miles an hour: that the home-signal " remained down for the goods train to get away: that " he observed the fireman of the goods train, and " thought he was in the worse condition of the two " men, he also was on the foot-plate: that he did not " see either of these men off the foot-plate of the engine " at all after the collision occurred: that these men did " not seem to understand what he was saying to them, " but appeared to be stupid: that he did not say any- " thing to the breaksman: that he came back towards " the engine immediately after the train stopped.

Alexander Lamb, station-master at Princes Street station, Perth, 13 years, states, "that he received " information at 5.20 p.m. that a collision had occurred " at Barnhill, and having made the necessary ap- " plications for assistance he proceeded to Barnhill " with an engine and three carriages: that all the " passengers who had remained at the spot were then " brought on to Perth: that he spoke to the driver " of the goods train at Barnhill, he was on his engine " at the time, and the fireman was there also: that " he considered that both were the worse for drink, " but the fireman was in a worse state than the " driver: that he judged by the appearance of the

" men, and by the driver not being enabled to explain " what had happened: that he could not understand " him to complain of the overheating of any parts of " the engine, and could not make out what he said: " that he did not see him walk at all: that there was " scarcely any steam, and the driver did not complain " of the state of the coals: that the fireman was " decidedly in a worse state than the driver: that " another engine was taken down to take on the goods " train, not the one that took down the empty car- " riages to bring on the passengers: and that the " goods guard was all right."

John Livingstone, signal fitter, states "that he was at " the Barnhill box when the collision occurred, all the " signals were at danger as the goods train approached, " but the home-signal was taken off before the goods " train stopped: that he went down to the engine " after the collision occurred, he was in the cabin at " the time: but he saw the driver and fireman: that " he passed the fireman on the down line side of the " train off the engine, but did not speak to him, " but thought he was under the influence of drink: " that he did not speak to the driver who was on " the foot-plate of the engine, but did not form any " opinion as to his state: that he thinks there might " have been an interval of 10 minutes, all that, between " the time when the goods train came in sight and " when the collision took place: that he saw the " goods guard come up towards the engine, instead " of going back to protect the tail of his train."

Wm. Christie, engine-driver, 7 years in the service of the company, states, "that he saw the fireman of " the goods train engine walking in Dundee streets " about ½ past 2 o'clock on the day of the accident, " and he asked for a public-house, and said that he " had gone about half an hour looking for one: and " he saw that he had been drinking and recommended " him to go away to his work, as he had had plenty " of drink already: that he saw the driver and saw " nothing wrong with him after he had seen the " fireman."

Charles Henderson, station-master at Errol, states, " that he was on duty at Errol when the 1.0 up " goods train arrived, and he spoke to the driver and " fireman in consequence of their having broken a " waggon the same day on the down trip (11.0 a.m. " from Perth), by shunting it too rapidly: that both " appeared to be all right, and they gave in their " names, and both appeared to be sober: that he was " near the engine when the train was started, and he " did not hear the breaksman call out that the driver " was not in a fit state."

David Crichton, driver of the 4.15 up passenger train from Dundee on the 24th August, states, " that " his train consisted of engine and tender, eight car- " riages, and one break-van, with one guard: that he " left at the proper time and kept time on the " journey: that he saw the van of the goods train " before he saw the distant-signal at Barnhill: that he " was running at between 18 or 20 miles an hour, " when he saw the goods van: that the steam had " previously been shut off in order to stop at the " ticket platform at Barnhill, and when he saw " the goods van, he reversed his engine, put the " steam on the reverse way, the tender-break was " previously on, and he whistled for the guard's " break, and was running about six miles an hour " when he ran into the other train: that the leading " wheels of his engine were raised on the van of the " goods train, but the engine was not thrown off the " rails, nor any of the vehicles in his train: that " the van and three waggons in the goods train " were knocked off the rails, and that the chimney " of his engine was knocked off, the buffer-beam " was broken, two buffers were knocked off, and some " holes were made in the smoke-box of his engine: " that he saw the fireman after the collision: he was " very much under the influence of drink, and he " recommended him to get out of the way: that " he did not see the driver: that the collision oc- " curred about 5.10 p.m.: that the breaksman was out " about 60 yards: and he called out that both driver " and fireman of the goods train were drunk."

William Parker, fireman to D. Crichton, confirmed the driver's statement, and states, "that he also saw " the driver, and thinks there was something wrong " with him."

From the preceding statements it appears that the 1.0 p.m. up goods train from Dundee West to Perth, on the 24th August, consisted of an engine and tender, 37 waggons, and one break-van, and as it approached Barnhill telegraph station, the driver says he found the distant and home signals on at danger against him, but the home-signal was taken off for him to proceed as he was about to stop and get down off his engine, after he had passed the distant-signal, which was still standing at danger, in consequence of the bushes of the connecting-rod of the engine having become heated; and after he had stopped he tried to start again, but was unable to do so, from a want of steam owing to the badness of the coal. The goods train was brought to a stand-still with the guard's van standing 20 or 30 yards outside of the Barnhill up distant-signal, and the guard of the train instead of at once going back to protect the tail of his train as he should have done, in accordance with the company's regulations, went forward towards the front of the train, until he was signalled to go back by the Barnhill signalman.

The goods train is stated to have arrived at Barnhill at 5.2 p.m., and the collision to have taken place at 5.7 p.m. or 5.10 p.m. The guard states that he had got back 150 yards from the rear of his train, but this seems very questionable, as the distance differs considerably from what he had first mentioned, and the driver of the passenger train engine states that he observed the van of the goods train before he saw the distant-signal, and that the goods guard was back about 60 yards.

No blame appears to attach to the servants of the company in charge of the passenger train, although it is highly probable, judging from the damage done to the rolling stock, that it was travelling at a much higher rate than 6 miles an hour, as stated by the driver, but the train was provided with an insufficient amount of break-power, viz.: one break-van to eight other vehicles, besides the engine and tender.

The collision was evidently the result of the misconduct of the engine-driver and fireman of the goods train. I did not see the fireman, as he had left the place and the company's service, but strong evidence was produced to prove that both were under the influence of drink, the fireman being in a much worse state than the driver.

I understand that the driver, at the time of the collision, said nothing about the bushes of the connecting-rod having become heated, and if it had been the case, it was probably due to his own inability to attend properly to his engine; and his failure to keep up a proper supply of steam must be set down to the same cause, and not to the quality of the coals.

It will also be noticed that the guard of the goods train stated that he had been working as a spare guard for 9 or 10 months, but had no watch: that he had never been supplied with detonating signals, and did not know where to apply for them, and that he had not any hand-signals.

No explanation was forthcoming at the time of making my inquiry (4th instant) on this subject, beyond the statement that the goods guards are not under the control of the superintendent of the line (Mr. Ward), but under the general goods manager. But the company's rule, No. 237, is perfectly explicit as to the duties of a goods guard on this head, inasmuch as it states, "Every goods guard must have " with him his watch and whistle, and take with " him in his van a red, a green, and a white flag,

" a box of detonators (not less than 12), a hand-
" signal lamp, a full set of tail and side lamps, two
" or more spare coupling chains, a box of grease with
" knife and probe, a can of oil and feeder, a break-
" stick, two sprags, and two hard scotches."

There is no doubt this goods guard was much to blame for not having attended to this order. I enclose a letter from Mr. Ward, forwarding a copy of an order issued by Mr. Thompson, general goods manager, in April 1874, to yardsmen and breaksmen bearing upon this subject: but although this order implicates the head yardsman, I must say that there appears to have been an absence of proper supervision, or such a length of time should not have been allowed to elapse without the discovery of so loose a system of working.

The collision would not, in all probability, have occurred if the traffic had been properly worked on the absolute block system, and it is likely that it would have been avoided if the passenger train had been fitted with continuous breaks under the control of the engine-driver.

I have, &c.,
W. Yolland,
Colonel.

The Secretary,
(*Railway Department,*)
Board of Trade.

Caledonian Railway Company,
General Goods Manager's Office,
302, Buchanan Street, Glasgow,
6th April 1874.

Order to Yardsmen and Breaksmen.

Goods and Mineral Departments.

It is the duty of breaksmen before starting their trains from terminal stations to ascertain from the head yardsman that all is ready. *Head yardsmen* are not only responsible for this regulation being carried out in its integrity; but *it is also their imperative duty to see* at the same time *that breaksmen in charge of trains or acting as second men, are perfectly fit and correct in every respect,* otherwise they must not be allowed to proceed with their trains. The head yardsmen are expected and will be held responsible for this being done, and they must report particulars as they arise to their station superintendents.

Attention is called to rule 4 of the company's general regulations, which is as follows:—

"No instance of intoxication on duty will be
" overlooked: and besides being dismissed, the
" offender will be liable to be punished by a
" magistrate. No servant is allowed to have
" spirits in his possession at stations or on
" the line."

(Signed) James Thompson,
General Goods Manager.

To Glasgow, Buch Street, Edinburgh, Leith, Carstairs, Dumfries, Stranraer, Carlisle, Sterling, Perth, South and North, Dundee, East and West, Aberdeen, and Greenock.

Caledonian Railway Company,
General Superintendent's Office,
302, Buchanan Street, Glasgow,
11th September 1876.

Dear Colonel Yolland,

Barnhill Accident.

Referring to what passed at your inquiry into this at Perth on the 4th inst., and specially as to the guard not having detonating or hand signals with him, no doubt he was very much to blame, and so I think is the head yardsman who sent him, for not seeing that the man had all the necessary articles prescribed in the company's rules for protection of the train; especially as he was not a regular guard. Kindly note the enclosed copy of a circular issued by our general goods manager in April 1874, which I hope will reach you before you make your report.

Very faithfully yours,
H. Ward.

2, Pilmuir Place,
St. Andrews, Fife.

Printed copies of the above report were sent to the Company on the 30th September.

CALEDONIAN RAILWAY.

Board of Trade,
(*Railway Department,*)
Whitehall, 16th September 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 31st ultimo, the result of my inquiry into the circumstances connected with the collision which occurred on the 29th ultimo at Burnhouse sidings near Holytown on the Caledonian Railway.

In this case, as the 3.12 p.m. down passenger train from Carlisle for Glasgow was passing a point about 150 yards north of Burnhouse signal-cabin it came into collision with some waggons forming part of the 4.50 p.m. up goods train from Glasgow for Carstairs, which waggons, owing to the fracture of an axle, had been thrown foul of the down line just as the passenger train was approaching the spot.

Ten passengers and the driver and fireman of the down train were more or less seriously injured. In the goods train no personal injuries were sustained.

The engine and tender of the passenger train were turned over on their sides and seriously damaged; a composite carriage next the tender was broken up; and a post office van next in order much damaged; the other vehicles in the train escaped with minor injuries, the front wheels of the carriage next behind the post office van having been (in addition to those of the first two vehicles) knocked off the rails. The total estimated damage amounts in the passenger train to 1,200*l.*

In the goods train 16 waggons were off the rails and of these seven were more or less damaged.

The broken axle was the front one in the fourth waggon, it broke off at the inner end of the right journal; the long portion remained under the waggon; the right journal was picked up among the débris.

The portion of the line where this collision occurred is straight and nearly level. From the marks left on the permanent way the axle appears to have broken at a crossing near the Burnhouse signal-cabin; the collision occurring about 150 yards further on.

The evidence is as follows:—

1. *James Gray,* driver about 22 years. I joined the 3.12 p.m. passenger train at Carlisle for Glasgow, and left Carlisle at 3.22, the London train having been 16 minutes late. I was detained on the journey by single line working, in consequence of waggons being off the road, at Shieldsmuir, and lost some seven or eight minutes thereby. We were running at about 30 miles an hour, having been slowed a little at Holytown. I had put on steam again on finding the Burnhouse signals clear, and about 50 or 60 yards from the spot I saw some waggons in an approaching goods train bulge towards the down line in the form of half a circle. I had time to shut off steam, but I cannot say whether I reversed or not when I jumped off and fell down; when I recovered, the tail of the train was about five yards past me, the train having then stopped. I was slightly

injured by the fall and have not been on duty since. I did not see the Burnhouse home-signal thrown up as I approached it.

2. *Richard Lockie*, fireman about five years. I think we were running between 20 and 30 miles an hour when I saw some waggons in the up goods train leaving the rails and inclining towards the down line, when about 100 yards off, or not quite so much. I told the driver and put the break on partly; the driver shut steam off and reversed, and then jumped off. I went to jump also, but was frightened and remained on, and was on the foot-plate of the engine when the collision occurred. I don't know what became of me, having been knocked insensible, and was between the tender and engine when I recovered myself, without having been seriously injured. I was eight days in the infirmary and am still off duty.

3. *James Clelland*, guard 13 years. I joined the 3.12 p.m. train at Carlisle and left it at 3.22 p.m. The train consisted of 11 vehicles, viz., a composite, a travelling post office, three composites, one third-class, a break-van in which I was riding (these seven for Glasgow), three composites, and another break-van for Edinburgh; on leaving Carstairs the train consisted of the seven front vehicles only. At Shieldsmuir we had a further delay of four minutes, and then lost a little time from the signals being against us at Holytown. We were running past Burnhouse at about 25 to 30 miles an hour, when about 50 yards off I saw some waggons leave an up goods train and incline towards the down line. I had time to put on my break and hold on by it till the collision occurred. I did not feel much shock, and was not injured. The engine, tender, composite, post office van, and leading wheels of the next composite were off the rails. There were six or seven passengers in the leading composite and two clerks in the post office van. The time of collision was 5.47.

4. *James Martin*, 20 years driver. I started from St. Rollox with a goods train for Carstairs. I stopped at Gartsherrie and at Coatbridge, and after leaving the latter I had on a load of 31 mixed waggons and a van. The Burnhouse signals were off as I approached them and I passed it at about 13 to 16 miles an hour. The driver of the down passenger train jumping off just opposite my engine was the first thing that attracted my attention, and on looking round I saw the effects of the collision, which had then occurred; only four waggons remained attached to the engine; the three first on the road, but the fourth off the rails, and the leading axle broken at the right shoulder. I pulled up at once and we stopped in about 100 yards; the longer portion of the broken axle remained under the waggon. Behind the fourth waggon there were two others off the rails, and then 11 others on the rails, and the rest were more or less broken up. I make the time of collision about 5.50. I should not have known of the accident but for the second goods guard (whose place is on the engine) calling my attention to the driver jumping.

5. *James Cowper*, five years fireman. We were running at a moderate speed near Burnhouse, the Holytown signals being against us, when the goods guard drew our attention to some one jumping off the passenger train engine, and by the time I had looked back the collision had occurred. We only ran a short distance before we stopped, when only four waggons remained attached to the engine.

6. *James Ritchie*, second guard of the goods train. I was riding on the engine and agree with Cowper's evidence. The fourth waggon was a loaded one, sheeted, its front axle was found broken after the collision.

7. *William McKenzie*, goods guard five years. I was in charge of the 4.50 p.m. goods train from St. Rollox for Carstairs, having to stop at Gartsterrie, Coatbridge, and Holytown. We left Coatbridge at 5.40, about right time, having on 31 mixed waggons and a van. I was alone in the van. Nothing unusual occurred up to the time of the collision, when we were running about 20 miles an hour. I did not know that any waggons were off the road till the engine of the passenger train struck them. My van remained on the rails and was not injured; five or six waggons remained attached to the van, and were not damaged.

8. *Disney Ness*. I have been signalman nearly 18 months, about four months in the Burnhouse cabin. I came on duty at 7 a.m. for a shift of 11 hours. The traffic is worked on the block system. At about 5.43 I received notice for the 3.12 p.m. down train from Holytown north cabin, and for the up goods train at 5.41 from Carnbrae. The goods train passed the cabin at 5.46. I noticed nothing wrong with it as it passed; but half-way between the cabin and the down home-signal I saw a waggon near the end of the train jump the rails towards the down line; on observing this I at once put on the down-signals against the mail, and belled on to Holytown to stop and examine the goods train. In three or four seconds the collision occurred, two other waggons having also left the rails. The collision occurred at 5.46. The engine of the passenger train was more than half-way between the distant and home signals when the first waggon left the rails.

This collision was in all probability brought about by the fracture of the front axle of the fourth waggon in the up goods train, in consequence of which, and owing most likely to one of its springs having become entangled in the wheels of one of the following waggons, this waggon and some others ran off the rails and obstructed the down line, just as the down passenger train was approaching, and without giving its driver time to do more than shut off steam and jump for his life.

The axle which thus broke was of the ordinary form and was under one of the Caledonian Company's own waggons. Nothing is known of its history, there being no date or name upon it. Its diameter was $4\frac{1}{2}$ inches at the shoulder, tapering to $4\frac{1}{8}$ inches in the centre; $4\frac{1}{8}$ inches at the wheel seat, and $2\frac{7}{8}$ inches at the journal. The surface of fracture (at the inside of the right journal) showed a coarse description of iron and a flaw (not visible from the exterior) about two inches long by $\frac{1}{2}$ inch broad. The waggon had been put on the train at Coatbridge loaded (not heavily) with sundry goods.

There would appear to be no blame in this case attaching to any of the company's servants.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the Company on the 26th October.

CITY OF GLASGOW UNION RAILWAY.

Board of Trade,
(Railway Department,)
28th October 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 28th ult., the result of my inquiry into the circumstances connected with the collision which took place on the 26th ult. at College junction, Glasgow, on the City of Glasgow Union Railway.

In this case, the 6 p.m. North British Company's passenger train from College station to Airdrie came into collision with the Glasgow and South-western Company's pilot goods train which was proceeding from the Glasgow and South-western Company's goods yard to that of the North British Company, both situated close to College junction.

Six passengers were injured, though none of their injuries are believed to be of a serious nature.

The only company's servant injured (slightly) was the breaksman in the goods train.

The only damage done to the passenger train was to the buffer-beam of the engine.

In the goods train four waggons were knocked off the rails, and three of them badly damaged.

At College junction the North British Company's passenger lines from College station join the main lines of the City of Glasgow Union Railway; 70 yards to the west of the junction the lines from the Glasgow and South-western Company's goods yard join those of the North British Company from College station, the entrance to the latter company's goods yard being effected by facing-points on the incoming line, 60 yards west of the last named junction. Outgoing North British goods trains run on a distinct line of rails until this joins the City of Glasgow Union line, 105 yards east of the passenger line junction. The junction-cabin (in which all the points and signals are interlocked) is built against Barrack Street (over) bridge close to the facing-points on the North British Company's incoming line, or 130 yards west of the passenger line junction.

The only signals to which it will be necessary here to refer are the home-signals for permitting trains to enter the main line from the North British passenger line, and from the Glasgow and South-western goods line. These were respectively situated (at the time of the collision) 90 yards and 100 yards west from the cabin, and in full view of the signalman. They were properly interlocked so that both could not be off at the same time.

The collision occurred at 6.2 p.m., about 30 yards east of the junction-cabin.

Glasgow and South-western Company's goods trains proceeding from their goods yards to that of the North British Company have to proceed along the latter company's outgoing line, then along the City of Glasgow Union main line until clear of a crossing on that line, then set back through this crossing, proceed along the other main line, then along the North British line and through the facing-points into the goods yard.

This appears to be an inconvenient and objectionable arrangement, and one that might without any great difficulty be improved.

The evidence with regard to the collision is as follows:—

1. *John Graham*, signalman about 4 years in the City of Glasgow Union Company's service, two years at College junction: "I came on duty at 6 a.m., for a "12 hours shift, and I was in charge when the "collision happened, the relieving man having then "only just arrived; we have no communication of "any kind with the North British or Glasgow and "South-western signal cabins at College. The last "outgoing train from College station on the North "British line before the one that met with the "collision was the 5.30 p.m. passenger train from "College to Whifflet for which I lowered my home-"signal; I have no distant-signal. As soon as it "passed the points I put back the lever of this "signal into its normal position, but I don't know "whether the arm went at danger, as it was a very "dull night, and there was a good deal of steam "about from engines shunting. The lamp had been "lit about 4.30 p.m. I never had an opportunity "of looking again at this signal till the collision. "Surface men had been working during the day near "the new Glasgow and South-western outgoing "signal; at 5.40 p.m. the Glasgow and South-wes-"tern goods train whistled to come out to go to the "North British yard; the road was at this time "blocked; finding by mouth whistle at 5.56 p.m., "that the North British yardsman was ready to "admit it, I drew my signal to let it out, and it "came out at once—the engine having been standing "near the home-signal—and it drew slowly past the "cabin. I saw nothing of the North British pas-"senger train till I noticed the funnel of its engine "about 10 or 15 yards from the cabin; it struck me "it must be wrong, and I whistled at the driver from "the cabin window, and noticed that he looked "round. I then saw him reverse and put on back "steam and have his tender-break applied. I then "sent down my mate to look at the signals and on "his whistling I went down myself and found both "signals standing clear, as I had not at that time "put back the Glasgow and South-western signal. "I did not at this time ascertain why the North "British signal had not gone to danger when I had "put the lever back. I was present with a Glasgow "and South-western locomotive inspector in less than "half an hour after the collision, when we found "that one of the pulleys was jammed with a piece "of slag. I did not see this removed, and don't know "when it was taken out. There was no one else in "the cabin between 5.30 p.m. and 6. p.m. except me "and my relief man."

2. *John Peock*, signalman 6½ years in the City of Glasgow Union Company's service, three years at College junction: "I came on duty at 6 p.m. and reached "the cabin three or four minutes before 6, but I had "not taken up duty when the collision happened. I "noticed that the levers were drawn for the Glasgow "and South-western goods train, but I did not "observe the signal till after I had seen the North "British passenger train coming. I could not at that "time see the signals, but when the smoke and steam "had cleared away I saw both signals standing clear; "the engine of the passenger train had not reached "the cabin at this time. I shouted and tried to "attract the driver's notice, and I believe he saw "me. After the collision I went down to see what was "holding the North British signal off, but I did not "find out at that time and went back into the cabin. "The collision occured at 6.2 or 6.3; there was about "five minutes from the goods train starting to that of "the collision. I afterwards sent Graham out to see "why the signal remained off, and he came and told "me that a piece of slag was holding one of the "pulleys."

3. *James Balmer*, goods driver 1½ years in the Glasgow and South-western Company's service: "I "was in charge of a pilot engine and was engaged in "conveying a goods train of 19 waggons from the "Glasgow and South-western yard into the North "British yard at College. I think it would be about "5.30 p.m. when I drew up to the signal, having "whistled before I reached it. I think I stood about "half an hour at the signals, having whistled about "three times before it was lowered. I did not "notice while standing that the signal for the North "British train was off; the evening was pretty dull, "but I could see the signal-cabin perfectly from "where my engine stood. I don't know whether the "signal lamps were lit at this time. I started at once "and had no difficulty in drawing out; the engine had "got as far as the main line trailing-points, when I "heard some one whistle and looking back saw the "passenger train approaching. I shut off steam, "reversed and got on back steam, and had my "break applied, hoping to get a better place for the "North British train to strike my train, but had not "stopped when the collision occurred; the third "waggon from the engine was the first struck. "Neither I nor my fireman jumped off; the blow was "slight on the engine. It must have been about three "minutes from the time I started to the time of the "collision."

4. *Dugald Morrison*, goods guard eight months in

the Glasgow and South-western Company's service, previously yardsman at College: "We were ready "to start I think about 5.40, having on a load of 19 "waggons. I was riding on the last waggon. I heard "6 o'clock ringing when the signal was lowered, the "driver having whistled twice. I thought it was "strange getting the signal when the 6 o'clock North "British train was due, but I did not notice whether "the signal for the North British train was lowered. "I could see both the starting-signal and the College "junction signal-cabin from the waggon I was on. "I don't know whether or not the signal lamps were "lighted. The driver started at once on getting the "signal, and hearing mouth whistling in the North "British yard I turned round towards my engine, and "then saw the North British train, of which the "engine had passed me at about 10 miles an hour. "The collision and sudden stop knocked me off; "I was slightly hurt, but have not had to leave duty. "Four waggons were off the road and damaged. "After the collision I saw both signals standing off "at the same time, and was shown by a yardsman "that one of the pulleys was jammed with a piece of "slag. This was about a quarter of an hour after "the collision. I had no watch on at the time. I am "only a pilot guard."

5. *James Henderson*, goods guard six months in the Glasgow and South-western Company's service: "I was alongside of the waggons on the City Union "side of them when they started. It was about "5.45 p.m. when we were ready to start. The "6 o'clock bell did not begin to ring till the waggons "were going under the signal-cabin. I did not see "the North British train, nor did I see that the sig-"nal for it was off. The evening was pretty close "and dark, but I could see the signal-cabin at the "bridge from where I was standing."

6. *Edward Henderson*, driver 26 years with the North British and other companies: "I was in charge "of No. 229 engine, a six-wheeled tank engine with "a break-block on each wheel. We were running "engine first, and had on a train of nine carriages. "We started from College station punctually at 6 "o'clock by the station clock; the starting-signal was "lowered, and when I got round the curve I saw that "the College junction-signal was already lowered; it "was the arm I saw (not the lamp) down at caution. "I can see it from the North British signal-cabin. It "was a dull, hazy sort of evening. I was on the left-"hand side of the engine. I did not notice that the "Glasgow and South-western signal was off. I only "noticed, when under the bridge, that the goods train "was approaching the road I was on, but I did not "hear any whistle from the signalman. My speed "was not more than four or five miles an hour. I had "only time to shut off steam and reverse, when I "struck one of the waggons in the side. My engine "did not leave the rails; neither I nor the fireman "jumped off, nor were we hurt. When walking back "from the collision I could clearly see both signals off "from the east side of the bridge. The time of col-"lision was 6.2 or 6.3. My buffer-plank was broken, "and framing bent. The engine was able to run after-"wards. I had no difficulty about seeing my signals "on coming in at 5.45 p.m."

7. *Alfred Beadle*, fireman three years with the North British Company: "I was on the right-hand "side of the engine as we came out with the 6 o'clock "train from College. As we passed our own cabin "I noticed that the College junction-signal was off, "but I did not notice the Glasgow and South-western "signal. The state of the atmosphere was dull and "heavy. I did not notice that the Glasgow and "South-western train was running alongside of us "till close to the bridge, when my driver's saying, "'Here it is now,' drew my attention to it. He at "once reversed, and I applied my break, which I had "time to get partly on before we struck. Our speed "was not more than four or five miles an hour before "reversing. I did not hear or see the signalman. "I did not jump, nor was I hurt. I could see both "signals were off on going back just after passing "through the bridge. We started at six sharp by the "platform clock. The 6 o'clock bell was ringing "when we started."

8. *James Cowan*, guard seven years: "I arrived "at College from Airdrie at 5.28, three minutes late; "and we started at about 6.1, with a train of nine "coaches, including two vans, one in front and one "in rear. I was the only guard, riding in the rear "van. I saw that the College junction-signal was "standing clear as we approached it. The collision "took me unawares, as I had not seen the goods "train. Our speed was four or five miles an hour. I "was knocked about a little, but not hurt. The train "had not got through the bridge. I did not hear the "signalman whistle. I looked back and had no "difficulty in seeing our signal, which was still off."

9. *David Ramsay*, yardsman at the North British goods yard College, 23 years in the service, two years at College: "I was standing about 10 yards inside "the Glasgow and South-western starting-signal "when the goods train started. I had previously "given the Glasgow City Union signalman four "whistles to show that we could receive the train, "this was some time after he had whistled to me. As "I was watching the tickets on the Glasgow and "South-western waggons I heard something passing "at my back, and on looking round saw that it was "the 6 o'clock North British passenger train running "at about 8 to 10 miles an hour. I said 'Good God, "there is a collision,' and then looking at the signals "saw both standing clear. I had not before this "noticed that the North British signal was down. "I whistled as hard as I could to attract the North "British driver's attention, but he had already passed "me and I failed to do so. I remember at this "time seeing one of the signalmen looking out of the "Barrack street cabin window. The man I saw was "John Peock, as I could clearly distinguish. He "did not appear to be making any signs whatever "towards the drivers. After protecting the line, &c., "I saw, about 1½ hours after collision, a piece of slag "between the wire and one of the pulleys, the North "British signal being still off. From the time of the "Glasgow and South-western train starting to that "of the collision would be a minute or 1½ minutes."

10. *Robert Ballantyne*, signalman three years in the North British Company's service, all the time at College station: "I remember Henderson's engine "coming in at 5.42 p.m. I lowered my signals for "this engine to come in, but did not at that time "notice that the North British signal at College "junction was down, though I did see it off at 6 "o'clock. I did not notice that the Glasgow and "South-western goods signal was also off. The "North British train left at 6.1. I could see at this "time as far as Barrack street box" (about 300 yards).

11. *William Thompson*, Glasgow and South-western goods agent: "About 10 minutes after the collision I "reached the spot. I saw both starting-signals off. "Signalman Graham drew my attention to the fact "that a piece of slag was jammed in one of the "pulleys of the North British signal wire, and pre-"vented the wire running out. I did not remove the "slag, but saw that it was jamming the wire."

12. *Martin Gilmartin*, foreman platelayer in the Glasgow and South-western Company's service 11 months: "Lifting had been going on during the day "of the 26th near the pulley where the wire was "jammed. The ballast had been thrown out, but "was nearly all back. A few minutes before 6 I "had examined this pulley, among others, and saw "nothing wrong about it. I had not noticed that the

"North British signal was off, and had remained off "for some length of time."

This collision occurred in consequence of the City of Glasgow Union Company's signalman on duty in College junction-cabin omitting to see that the signal which he had lowered for the 5.30 p.m. North British Company's outgoing passenger train had returned to danger when he put back the lever in his cabin; this signal (owing to its wire being jammed) remained improperly lowered for half an hour, and was off at the same time as the conflicting signal for the Glasgow and South-western Company's goods train, the two trains being lured on to collision. The signal is only 90 yards from the cabin and is in full view of its front windows, and it shows great want of care on the part of the signalman that it should have remained improperly off for about half an hour. It is even more important that a signalman should see that a signal returns to danger, than that it falls to all right, when he intends it to do so.

This signalman is also to blame for permitting the Glasgow and South-western Company's goods train to leave the goods yard almost at the very time the North British passenger train was due, and consequently sure to be detained; in such cases passenger trains should always get the preference of goods trains.

There must have, no doubt, been want of care on the part of the Glasgow and South-western Company's permanent-way men in having thrown the slag ballast about the pulley, in which the wire of the signal afterwards became jammed, and for this the ganger must be held responsible.

It is desirable that there should be telegraphic communication between the junction-cabin and those in the Glasgow and South-western and North British yards. It would also conduce to safety if outgoing North British trains were not allowed to approach the junction while other trains were crossing it. This might be done by the junction signalman slotting the outgoing home-signal at the North British cabin.

As I before remarked, it is most desirable that a change should be made in the mode of transferring traffic between the Glasgow and South-western and North British goods yards, and that additional siding accommodation should be provided, so that shunting on the main line may be as much as possible avoided.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the City of Glasgow Union Railway Company on the 28th November.

GREAT NORTHERN RAILWAY.

Board of Trade,
(Railway Department,)
Whitehall, 9th October 1876.

Sir,

In compliance with the instructions contained in the Order of the 20th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that happened on the 16th ultimo, near Hatfield station, on the Great Northern Railway.

The newspaper-train which consisted of an engine and tender, a horse box, a composite carriage, a break-van with a guard, a post office van, another composite carriage, a third class, two more break-vans with two guards in them, a third class, a composite, a break van with the guard in charge, and a composite carriage with a break compartment and guard, left King's Cross at 5.16 a.m. on the day in question. The vehicles were coupled together in the order in which they are given. The composite coach at the tail of the train was a slip coach for Hitchin.

The train was one minute late in leaving King's Cross. It was intended to travel to Peterboro', about 76 miles distant, without stopping, and the time allowed for accomplishing this distance is one hour and a half. On the day in question the train proceeded all right as far as Red Hall signal cabin, which is about a mile to the south of Hatfield station. The signals at Red Hall and the distant signal at Hatfield were at all right as the train approached. It is reported to have been running at a speed of from 45 to 50 miles an hour as it passed the Red Hall signal cabin, and when about 239 yards north of this cabin, the engine driver felt the crank axle of his engine break at the right side, and the driving wheels both got inside the rails. He immediately shut off steam, and his fireman applied the tender break. The engine was brought to a stand at 927 yards from the place where the crank gave way. The first marks on the permanent-way were two broken chairs; a short distance beyond, one of the rails at the west side of the line was bent. At about 464 yards from where the first chairs were broken, five lengths of rails were displaced on the outside of the curve at the west side of the line. The train, when it reached this place where the rails were displaced, seems to have separated into three parts, and most of the vehicles got off the rails. The six last vehicles remained coupled together when they stopped, but they were off the rails, and leaning against the bank at the west side of the line. The next two vehicles were coupled together, but detached from the one close in front of them; the two that were coupled together were thrown on their sides at the left side of the line, and the leading end of one, and the tail end of the other, were broken in; and the third vehicle, which was a post office van, remained upright across the line on which it was running. The three vehicles that came next remained coupled to the engine and tender, but some of their wheels were off the rails. The leading wheels of the tender were also off the rails, and although the trailing-wheels of the engine were on the rails when it stopped, both these wheels and the driving-wheels appeared to have been off the rails while the engine was being pulled up.

Three of the guards were more or less shaken, and five passengers, and the letter sorter in the post office van, have complained of being shaken, but their injuries are believed not to be serious.

The permanent-way of the Great Northern Railway consists of a single headed steel rail that weighs 82 lbs. per yard. It is fished and fixed with inside keys in cast iron chairs, which weigh about 38 lbs. each. The chairs are fastened with two tree-nails and one spike to sleepers placed transversely at an average distance of about 2 ft. 3 in. apart.

The railway, at the place where the accident happened, curves to the right on a radius of 70 chains, and falls northward at a gradient of 1 in 200. At the time that the accident happened the line was about to be relayed, but the work had not been commenced.

The engine that drew the train was a single engine. The leading and trailing-wheels are 4 ft. 3 in. in diameter, and the driving-wheels 7 ft. in diameter.

	tons.	cwt.
The weight on the leading wheels is	8	11
Do. driving-wheels	14	8
Do. trailing-wheels	11	0

The distance between the centres of the leading and driving-wheels is 8 ft. 6 in., and between the

driving and trailing-wheels is 9 ft. 6 in. The crank axle broke at the shoulder of the crank. It was made of wrought iron, and was manufactured by Messrs. Cooper & Co., and had run 109,484 miles.

There was a flaw in the centre of the fractured section of the axle, which extended through the greater portion of the section, but this did not show on the outside.

I have, &c.,

The Secretary, F. H. Rich,
(*Railway Department,*) *Colonel R.E.*
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th October.

GREAT NORTHERN RAILWAY.

Board of Trade,
(*Railway Department,*)
Sir, *Whitehall, 4th October* 1876.

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 27th ultimo, the result of my inquiry into the circumstances connected with the collision which occurred on the 23rd ultimo at Hammerton Street junction, near Bradford, on the Great Northern Railway.

In this case, as the 6.15 p.m. passenger train from Leeds for Bradford was running through the junction it came into collision with the Bradford goods pilot engine which, while shunting in the Hammerton Street goods yard, had been permitted by the man in charge of it to foul the line on which the passenger train was approaching.

Five passengers have complained of being injured, but the injuries are believed to be of a slight character. The driver, guard, and assistant guard of the passenger train were also injured.

Both engines had their wheels knocked off the rails and their buffer-beams damaged.

At Hammerton Street junction the Great Northern Company's Bradford goods yard lines join the Leeds and Bradford main lines. The junction is properly signalled and the point and signal-levers are concentrated in and worked from a raised cabin 25 yards on the Leeds side of the junction-points. The home-signals for trains approaching from Leeds are 100 yards from the points, the collision having occurred 25 yards on the Bradford side of them. There is a signal for giving permission to come out of the goods yard along the wrong line 155 yards from the junction-points. The line is on a gradient of 1 in 50, falling both towards Bradford and into the goods yard.

The evidence is as follows :—

1. *Alfred Camps*, signalman six years, at Hammerton junction five years. I came on duty at 2 p.m. for an eight hours shift. I was alone in the cabin. I keep a register of passing trains. I took the Bradford train "on-line" from Laisterdyke at 6.45 p.m., but kept my signals against it till 6.47, and brought it nearly to a stand just outside the home-signals, in consequence of the St. Dunstan cabin's (the next cabin about half a mile off) distant-signal being at danger. I then lowered my home-signal for the train to proceed, and when its engine had approached to within about 10 yards of the cabin I heard the shunters calling out to the pilot driver which drew my attention, and I saw the pilot engine close to the crossing, past the slip road, by which I might otherwise have been able to turn it on to the up line to Leeds. I threw up the home-signal against the passenger train when the engine was under the cabin, showed the pilot driver a red light, and asked him what he was doing. At this time he was apparently coming on without seeing he was fouling the junction; and, I believe, he did not see the passenger train till he struck its engine. I had heard no whistle from the goods yard for coming along the road the pilot engine was on. The whistle is one long and one short, and the signal is the lower arm on the two-armed post. The collision occurred at 6.47 p.m.

2. *John Jessop*, driver 17 years. I joined the 6.15 p.m. train at Leeds for Bradford. The engine was a 4-coupled one, with a tender. I was running engine first with a train of eight vehicles; there were no breaks on the engine wheels. I was about five minutes late leaving Laisterdyke, owing to extra Saturday traffic. I found the Hammerton junction signals against me when I left Laisterdyke, but the home-signal was taken off after I had whistled for it, soon after I had passed the distant-signal. I was close to the junction, running at a speed of about eight or nine miles an hour, when I saw that the pilot engine (the red head-light of which I had seen before, but thought it was crossing on to the up line) was foul of the road on which I was approaching. I called out to the fireman, who applied his tender-break, and I reversed and had time to get steam against my engine (steam had been shut off just after getting the home-signal lowered), and kept it on till we struck. Neither of us jumped off. The right-hand buffer of the pilot engine struck the centre of my buffer-beam. My engine dropped off the rails, and the pilot engine rebounded and left the rails. I was hurt, and off duty altogether about a week.

3. *Thomas Sellers*, guard about two years. I was in charge of the 6.15 p.m. train from Leeds for Bradford. I was in the last break-compartment of the train, which consisted of eight vehicles, three of which had break compartments. Another guard was in the front break-compartment. We started punctually, but lost time on the road from extra Saturday work, and left Laisterdyke at 6.45, five minutes late. The Hammerton Street junction signals were at danger when I first saw them, but the home-signal was taken off before the engine reached it, but I cannot say how far off we were at the time. We had not quite come to a stand before the signal was taken off; the driver put a little steam on, and we were running through the junction at a speed of six or seven miles an hour when the collision took me unawares. My head was knocked against the side of the break. I have been off duty since. The collision occurred at 6.48 p.m.

The assistant guard of the train was too ill to attend the inquiry.

4. *Walter Watson*, in the Company's service since December 1874. I have been employed as cleaner, and for the last three weeks I have been assisting in the shed. I joined the pilot engine at 4 p.m. with driver Frank Dews, by direction of shedman Amsworth, to act as fireman in the goods yard while a regular fireman was being procured. At about 6.35 p.m. Dews, who up to that time had been on the engine with me, left me to go and get his tea, telling me to light the lamps, and saying that he would be back in 15 minutes, the shunter telling him that if he was back in 20 minutes it would be time enough; the engine was then on the bank. Two minutes after this the same shunter came to help me light the lamps, and told me to go up into the Tichborne Road; I accordingly whistled, got the signal, and went into that road. I said to the shunter I did not want to move the engine, but he said he only wanted to make an odd shunt. He then shouted to the signalman, "Down in the coal yard," and the signalman said, "All right," on which I rossed and went into the coal yard, where the shunter hooked me on to two break-vans, and told me to go "right out," by which I understood I was to go till I got a signal to

come back, but well knowing that I was not at liberty to foul the main lines. I was standing on the right side of the engine looking back towards the shunter for a signal to stop; I did not get one, but heard a mouth whistle, upon which I stopped by shutting steam off. I then found out that I was foul of the crossing, and at the same time the passenger train ran in. My break was off at the time. I never heard anyone shout till I was foul of the main line. I had just jumped off when the collision happened. The night was rather hazy. My engine was knocked off the rails.

5. *Frank Dews*, spare driver about 18 months, fireman about six years. I joined the pilot engine about 3.30 p.m. with Watson as fireman. I was aware he was not a regular fireman. I left the engine at 6.40 to get my tea, shunter Little saying if I was back in 20 minutes it would be soon enough and that the engine would stand till that time. I then told Watson to light the lamps and not to move. I met Sayers, the head shunter, and told him I was going to my tea, and that I did not wish the engine to move till I came back. I was at my tea when I heard a crash about five minutes after I had left the engine, and on going out I found it was my engine that was in collision. On meeting Little, I said to him "This is a short 20 minutes," and he said "Yes, it is." I had commenced duty at 3.30. having had my dinner at 1. I live close by the goods yard.

6. *William Sayers*, shunter in Hammerton goods yard, about 18 months. I was not present when Dews left his engine on the evening of the collision; my mate was beside the engine, which was then on the bank, when I called out that I wanted the engine to pull some breaks out, my mate said "all right," and the engine went into the Tichborne Road, when I hooked on the breaks and told the pilotman to go ahead over the points. I saw the driver was not on the engine at this time. I did not have the conversation with him which he states. I was on the left-hand side of the engine and gave Watson a hand-signal to come back as soon as the vans had cleared the points, through which they were to set back. As he did not come back I shouted to him, but still he went on. I ran after him shouting, but could not stop him in time to save the collision. I am perfectly certain that nothing passed between the driver and me about his being away 20 minutes.

7. *John Little*, 5 weeks assistant shunter (previously in the company's service but resigned and returned after 15 months absence). I was beside the engine when the driver left it, but I was not aware that he had gone till after I had directed him to "whistle up," and heard four whistles given instead of one; I then looked on the engine and saw the driver was not there. I then told the man on the engine to whistle once, which he did, and upon the signal being lowered he went into Tichborne Road; here Sayers coupled him on to the breaks, and told him to go ahead over the points, through which he was to back the break-vans. He went ahead over the points; I was standing by the points and had turned round to go to another pair, when hearing some one shouting to the pilot engine to stop, I turned round again and gave a red light on the right-hand side; at this time the engine had got about half-way between the points and the main line junction. I could not see that he stopped and it was not light enough for me to see where he was on the engine. I followed up and was about 10 yards from the rear break-van when the engines met there being still some motion on the pilot engine. I did not see Watson after this. I had no conversation with Dews after the collision.

In consequence of the direct contradiction between the driver and the shunters I confronted these men together, but they each firmly adhered to statements they had made; so far as I could judge by the men's manner I formed the opinion that the driver *did* tell the shunters he was going away for 15 minutes.

This collision was caused by the mistake of an inexperienced man who was acting as fireman with a pilot engine during the temporary absence of the driver. If he had acted prudently he should have refused to move the engine during the driver's absence. As it was, while looking back for a signal to stop, he ran along the down goods line up a gradient of 1 in 50, 100 yards further than he need have gone, and thus fouled the down passenger line just at the time the passenger train (which had happily been nearly stopped at the home-signals owing to the next block section not being clear) was passing the junction. The driver of the pilot engine is much to blame for having left it—and this more particularly with so inexperienced a mate—to go home and get his tea, which he should have brought with him.

If the shunters were aware, as I believe was the case of the driver having gone to his tea, they were also to blame for having ordered the engine to move during his absence. I also think they can hardly have been keeping a good look-out on the movements of the engine when it was running towards the main line junction, or they would have seen what the fireman was about and have been able to prevent his fouling the main line.

This collision clearly shows the expediency of providing good lines with safety-points even on such a sharp rising gradient (1 in 50) as the present. These points have been put in since the collision. It is also desirable to reverse the normal position of the points at the goods-yard end of a slip crossing, these should be set right for the up instead of for the down main line.

I have, &c.,
C. S. Hutchinson,
Colonel R.E.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th October.

GREAT WESTERN AND LONDON AND SOUTH WESTERN JOINT RAILWAYS.

Sir, *Portland, October 3rd*, 1876.

In compliance with the instructions contained in the Order of the 14th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 13th ultimo, at the Portland joint station of the Great-Western and London-and-South-western Railway Companies.

In this case, the 6.45 p.m. passenger-train from Weymouth for Portland, in running into the Portland station, came into violent collision with the buffer-stops at the end of that station. The buffer-stop was knocked out of place, and the front part of the engine badly damaged. One passenger-carriage was materially, and others were to a less extent damaged; but no vehicle left the rails. Up to the present time 22 passengers have complained of being shaken or injured. The engine-driver of the train was also injured.

Description.

The Weymouth and Portland Railway, about 4¾ miles long, is leased to the Great-Western and

London-and-South-western Railway Companies. On leaving Weymouth there is a level portion. There are three rising gradients, of which the steepest is 1 in 58 for a little over a mile, then a short level portion, then falling gradients for about a mile of 1 in 66 and 1 in 88, then a short level portion, then falling gradients of 1 in 205 for nearly a quarter of a mile, and then a level portion for 1¼ miles into the Portland station.

According to the printed instructions to enginemen, guards, and all parties concerned, the "Enginemen of trains to Portland" must shut off steam at the three-arched bridge (near the summit), and must have their trains under complete control when running down the declines towards Portland.

In approaching Portland station, there are 5 sets of facing-points within a distance of 19 chains.

The shed over the platform of the Portland station is 155 feet long, and the platform extends 120 feet beyond the shed, the platform being therefore 275 feet long. The platform-line is a single one, and is bounded by the station wall on the one side and the platform on the other side.

There are a home and a distant signals at the approach to the station, at distances of 460 yards and 946 yards respectively from the buffer-stops at the end of the station.

There is an instruction issued separately by the London-and-South-Western Railway Company, and also included in their printed weekly notices of special traffic to the following effect :—

"Weymouth and Portland joint line." "All "engine-men working the trains on the Weymouth "and Portland joint line are hereby instructed to "pass over the passage or ferry-bridge (about 1¾ "miles from the Portland station) at a speed not "exceeeding 20 miles an hour until further notice."

The train in question consisted of a tank engine, a cattle-truck, a long goods-wagon, a break-van, 2 first-class, 2 second-class, and 2 third-class passenger-carriages, and another break van.

Evidence.

The engine-driver, *Henry Tildsley*, has been an engine-driver for 21½ years last March, in the service of the London-and-South-western and Ulster Railway Companies. He has been in the service of the South-Western Company altogether for about 17 years. He entered the service of that company as engine-driver 21½ years ago, and, leaving them for a time, was in the service of the Ulster Railway Company for 4½ years, after which he returned again to the service of the South-western Railway Company. He has been driving passenger-trains between Weymouth and Portland ever since the opening of the Weymouth and Portland line on the 16th of October 1865. He drove the first passenger-train that passed over the line, and he has been regularly driving passenger-trains ever since. On the 13th ulto. he left Weymouth at 6.45 p.m. punctually. He reached Rodwell (1½ miles from Weymouth) at 6.50 p.m., and started again at 6.55 p.m. He shut off steam on reaching the summit from Rodwell, and did not re-apply his steam until after he had passed the ferry-bridge, about 1¾ miles from Portland, which bridge he passed at a speed of not more than seven or eight miles an hour. After passing the ferry-bridge he re-applied his steam, and kept it on for about 200 yards, when he shut it off again. He was then going at a speed of 10 miles an hour, and his fireman applied the engine-break. The driving and trailing wheels were skidded on the application of the break, and his fireman said to him "I do not think we shall stop," because the wheels were sliding along on the slippery rails. He opened his whistle for the guard to apply the break, which he did. He then whistled for sand to be applied to the rails at the station. He and his mate both used their sand-boxes, one on each side of the engine, and applied sand to the rails; but he was unable to reduce the speed, and struck the buffer-stop at the end of the station at the speed of two or three miles an hour. There was a little rain falling; the wind was behind them; the rails were very slippery; and for these reasons he was unable to stop his train before striking the buffer-stops. He reversed the engine before reaching the auxiliary signal. There was a strong north-west wind behind them. His engine was in good order in all respects, and the break working properly. There were two extra vehicles on this train, a cattle-truck containing three or four beasts, and a long goods-wagon containing sheep and pigs. If these two vehicles had not been attached to the train, there is no doubt they would have been able to come to a stop in the station without striking the buffer-stop. He sometimes has extra trucks in the same way attached to the train, but not more than two extra vehicles. He was unjustly fined on one occasion for having two men on his engine; and he was fined on a second occasion for striking the buffers at Portland, in coming into that station a little too fast with his train, about 9 or 10 years ago. He was never fined for leaving his engine in Weymouth yard, or on any other occasion.

The guard of the train, *Edward Tomlinson*, has been a guard for more than 10 years, and has been all that time running the passenger-trains between Weymouth and Portland in the joint service of the two companies. On the 13th ult. he left Weymouth punctually at 6.45 p.m. for Portland. His train consisted of a tank-engine and a cattle-truck loaded with cattle—but he cannot say how many—a long goods-truck loaded with sheep, pigs, and calves, a break-van, two first-class, two second-class, and two third-class passenger-carriages, and another break-van, making altogether 10 vehicles behind the engine. The usual train consists of eight vehicles behind the engine. The cattle-truck and goods-wagon were extra. They have such extra vehicles attached to the train sometimes once and sometimes twice a week. They reached Rodwell in due course at 6.55 p.m., and started again about 7.0 p.m. They passed the three-arched bridge (at the summit) at about 15 miles an hour, and came down the steep gradient at about that speed. His break was not applied in descending the gradient. They passed the ferry-bridge at the same speed. Steam was applied, and the train went rather faster to within 200 yards of the distant-signal. Steam was then shut off whilst the train was going at a speed of, he thinks, about 20 miles an hour. The engine-driver then blew his whistle and he applied his break. He was riding in the break-van at the tail of the train. He usually applies his break at about the distant-signal. His break having been applied, he passed the distant-signal at not more, he thinks, than 12 miles an hour. His break remained tight on from the distant-signal until the collision occurred. The speed was about two miles an hour when they entered the station-shed. He was knocked down in his van by the shock of the collision, and received a slight bruise on the head, but nothing to take him from his work. There was a slight south-west wind blowing, with a drizzling rain, and the rails were very slippery. He found his train was made up when he came from his tea. When there are more than 10 vehicles behind the engine he always asks for an extra man to ride in the leading break-van, so as to have two men to apply more break-power. When there are not more than 10 vehicles behind the engine he never asks for more break-power. When he has more than 10 vehicles, and asks for more break-power, he sometimes gets it and sometimes not. He more frequently gets it. If the train is starting from Portland he asks Mr. Parsons, the joint station-master at Portland. If from the Weymouth end he asks Mr. Targett, the London-and-South-western station-master at Weymouth; and if he is not at the sation the foreman on duty. Mr. Parsons and Mr. Targett have never refused him an extra man when he has asked for one. He has not been refused an extra man when he has asked for one for five or six years. He may

have had an extra man three times in the last two months. He has on such occasions taken a Great Western or London-and-South-western porter from the Weymouth end. There is no rule on the subject as to break-power. He thinks that if the trucks had not been in the way the fireman might have gone from the engine to the leading van, and helped to stop the train. At the same time the shock to the passenger carriages was considerably less in consequence of the trucks being next to the engine. He thinks that he could have pulled up if the waggons had not been there, or if there had been an extra man in the break-van. He thought he was riding in a small light four-wheel van. The van was empty. When the line was first opened, one break-van only was employed with the trains, which usually consisted of the same number of vehicles as at present. The second break-van is now employed, in order that the guard may ride at the back of the train in each direction. When there was only one break-van, the two men rode together in it.

Alfred Terrill has been a registered fireman in the London-and-South-western Company's service for about 13 months, and has worked as fireman with the same engine-driver between Weymouth and Portland for about 12 months. They left Weymouth punctually on the 13th ult., and nothing unusual occurred until they reached the ferry-bridge. About that spot he noticed there was a drizzling rain. They passed the ferry-bridge at the speed of about 20 miles an hour. His mate, observing that it was a rough night, shut off steam about half a mile on the other side of the Weymouth distant-signal. After running about a quarter of a mile he applied the engine-break, but the rails being so slippery, the wheels were immediately skidded. His mate took the break-handle, and he himself started putting sand on the rails. He was then about a quarter of a mile on the other side of the distant-signal. He then took the break-handle again, while the engine-driver worked the sand-box on his side. His mate also blew the whistle of the guard's break, and blew it repeatedly going in towards the station. He cannot tell at what speed they passed the distant-signal, nor at what speed they passed the home-signal. He dropped off the engine at six or eight yards from the buffer-stop, between the shed wall and the engine, but he cannot say how fast the engine was going when he left it. The train was not running any faster than usual, but the rails were so slippery, and that is why they could not pull up. The train was rather heavier than usual, inasmuch as there were two extra loaded cattle-trucks on it. If the cattle-trucks had not been attached next to the engine he should have gone in the front break-van. That would have enabled him to stop the train. During the last winter he twice went from the tender to the leading van towards Weymouth to assist in stopping the train, but he has never done so in running into Portland.

Doctor *George Alfred Ray*, Licentiate of the College of Surgeons, practising at Portland, was a passenger in the train in question. He is in the habit of riding frequently between Weymouth and Portland. He was engaged in conversation up to the time of the collision, and did not notice that the speed was greater than usual until the collision occurred. He thinks the speed might have been 10 or 12 miles an hour or it might have been less. When they approached the buffer-stop there appeared to be no diminution from the ordinary speed at which the station was approached from the curve leading to it. The shock was a severe one. His chest was bruised, and he has not since been able to walk his rounds. The engine-driver was unable to walk after the collision, and was conveyed in a carriage to his surgery. On examining him he found that he was suffering from severe bruises on the left side of the breast, with probable fracture of three ribs. The engine-driver, who was afterwards treated elsewhere, was perfectly sober at the time.

The switchman on duty in the cabin at the entrance to the Portland station, *Henry Richards*, saw the 6.45 p.m. passenger-train approaching his cabin on the 13th ult. It did not appear to him to be going any faster than usual. He saw the fire flying from the guard's break as the train passed the home-signal; and about 12 yards before the train reached the hut the wheels of the engine skidded. The wheels did not seem to bite on the metals at all. He saw the fireman at his break, and the driver at his regulator-handle. When the guard's van passed the cabin he saw the guard sitting on the raised seat, and he showed him a red light. He saw the van going by with all the wheels skidded. He thought it was very slippery, and he would just let the guard know the wheels were skidded and something was wrong. He never saw the wheels skidded before so far back as that. He never showed a train a red light before coming into the station.

Benjamin Adkins, the foreman porter at the Portland station, was standing at the door of the booking-office, on the platform, when the accident occurred. He did not see the train until it was within 10 yards of the buffer-stop. He does not think that the speed exceeded three miles an hour when the engine struck the buffer-stop. He ran to a first-class carriage to assist the passengers, and did not have any conversation with the engine-driver after the accident.

Mr. George Francis Parsons, the joint station-master at Portland, and also superintendent of the Weymouth and Portland branch, as far as the Weymouth junction, for the two companies, was in his office when the accident happened. On hearing the shock of the collision he ran to the spot. He found the driver so much injured that he was unable to speak, and he went to attend to the passengers. He found the couplings between the engine and the leading truck and between the goods truck and leading break-van broken. The first compartment of a first-class carriage was much damaged. He has never received instructions on the subject of break-power, but the rule which he has adopted for his own guidance is,—when there are more than 10 vehicles behind the engine a second guard or breaksman should be employed. He has always considered that when there were 10 vehicles behind the engine only one guard was required. When extra carriages are attached to the train an extra guard is always employed. There are then 13 or 14 carriages on the trains. There has been no question raised at any time as regards the break-power on the trains on the Weymouth and Portland line. It has been a matter left entirely to his discretion. He has been in the same position for five years last December. He has never refused extra break-power from the Portland end when it has been applied for by the guard. He has never given any written instructions to the guard, but he has told him, verbally, that when there are more than 10 vehicles he must always apply for an extra guard or breaksman. The rails were very slippery on that evening.

William Hunter, District Superintendent, Locomotive Department, London-and-South-western Railway Company, of Northam, near Southampton, has known the engine-driver, Henry Tildsley, since 1852. He has always considered him a careful, intelligent man, and one who has given upon the whole great satisfaction in the performance of his duties as engine-driver. He believes that Tildsley was fined on two occasions, once for having men suspected of stealing on his engine, and once for leaving his engine without any one in charge of it in the yard at Weymouth.

Conclusion.

This somewhat violent collision was occasioned by a want of caution on the part of the engine-driver, who evidently approached the station at too high a

speed under the disadvantageous conditions of very slippery rails, two extra vehicles on his train, and only one guard in the break-van at the tail of it to assist in stopping at the station. This engine-driver is an experienced man, but it appears that he has been fined on two occasions, and on one of them, according to his own admission, for a similar accident.

Considering the nature of the line between Weymouth and Portland, and the steep gradients which occur on it, as well as with a view to prevent such an accident from again occurring, it is very desirable that a larger proportion of break-power should be employed with these trains. The best mode of applying extra break-power would, no doubt, be by placing continuous breaks in the hands of the engine-driver, and affording to the guard at the same time the means of applying breaks at the tail of the train.

I have, &c.,

The Secretary,
Railway Department,
Board of Trade.

H. W. Tyler.

Printed copies of the above report were sent to the London and South-Western Railway and Great Western Railway Companies on the 26th October.

GREAT WESTERN RAILWAY.

Sir, *Bristol, 15th August* 1876.

In compliance with the instructions contained in the Order of yesterday's date, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred yesterday at the Bristol station on the Great-Western Railway.

In this case the 9 a.m. narrow-gauge passenger-train from Swindon for Taunton came into collision, in entering the Bristol station, with eight broad-gauge carriages loaded with passengers, waiting for their engine, and intended to start as an excursion train from Bristol for Weston-super-Mare.

No vehicles in either train were thrown off the rails, and very little damage was done to the carriages, but 30 passengers are believed to have been more or less injured.

The Bristol station is and has been for a long time in a transition state. The lines of railway have been completed according to plans which have been arranged between the different companies interested, but the roof and buildings are still in progress.

The line to be specially referred to in the present case is No. 1, which is employed for all down through trains on the Great-Western system. The length of the platform on the south of this line, exclusive of the slopes, is 530 feet. There are three signal-cabins, known respectively as the B, C, and D cabins. The B cabin is constructed on a bridge over the lines of rails on the east of the station, and is the principal cabin for controlling the entrance of trains from the east end. C cabin is immediately to the east of the station, and 110 yards from the B cabin. This cabin is used for controlling the starting of all trains eastward from the station. The signalman in that cabin is provided with levers for slotting certain signals worked by the signalman in the B cabin, controlling the entrance of all trains from the eastward. The D cabin is 350 yards from the C cabin, and is 120 yards on the south-west of the station.

The point of collision was 238 ft. from the west end and 341 feet from the east end of the platform, including the slopes.

There are ground-men at both ends of the station, employed to caution the trains into the station with flags, and also to protect passengers and others crossing the lines of railway.

The 9 a.m. narrow-gauge train from Swindon consisted of an engine and tender, four passenger-carriages, a break-van, two horse-boxes, and a carriage-truck. It left Swindon at 9.16, sixteen minutes late, partly in consequence of a train from London having been late, and partly because it was delayed in taking on horse boxes from that train.

Evidence.

The engine-driver, *Luke Higgs*, states that he left Keynsham about 10.46, 21 minutes late, and that he approached the Bristol station in due course. He found the distant and home signals worked from the B cabin all right for him to run into the station, and he passed under B cabin at a speed of about six miles an hour. When he was half way between the B cabin and the station-platforms he saw a policeman holding up a green flag about 40 yards from him. He took it as a caution. He did not know what it was for, until he saw the tail of the excursion train. He saw no signal of caution from the C cabin, and he walked to the left-hand side of the engine to see better into the station, and he then saw the tail of the excursion train about 50 yards in front of him. He had shut his steam off in approaching the North-Somerset junction, and he did not apply it again in running towards the station. When he saw the green flag he whistled for the guard, and reversed his engine, and by the time he had done so his engine struck the excursion train at a speed of three or four minutes an hour. He had just seen the ground-policeman before he opened his break-whistle. He intended to run nearly to the position in which the excursion train was standing as he approached the station, and he did not expect to find the excursion train in his way. He remained on the engine when the collision occurred, and was not hurt. He scarcely felt the shock of the collision on his engine. He is positive that he would have stopped in the usual position at the end of the platform. He has frequently run into the Bristol station before, ever since last March, and has never found anything standing on that line in his way before.

The fireman, *George Tanner*, after hearing the evidence of his engine-driver, confirms it in every particular, except that he did not see the green flag held up by the policeman, which was not visible on his side of the engine. He looked up at the bridge in passing, and saw the signalman on the bridge standing with his hands on his hips.

The guard of the train, *John Redwood*, was riding in the break-van behind the carriages. He thinks they were going a little faster than usual in approaching the signal-cabin on the bridge. He applied his break at the Harbour Bridge within 100 yards of the B cabin. He seldom applies his break in coming into Bristol station, because the train is generally checked or stopped in entering. Very seldom he gets a clear run. When he does get a clear run into the station he usually applies his break at the same spot as on the present occasion. He had only partially applied his break in passing the Harbour Bridge, and gave the handle another turn or two on hearing the break whistle blown on entering the station. If he had thought he was coming in a little faster than usual he would have applied his break harder on the Harbour Bridge. He was still trying to apply his break harder when he felt the shock of the collision. He was knocked down in his van, and slightly bruised on the head, but was not obliged to leave

his work. He considers that the engine-driver would have stopped the train at the usual place if the collision had not occurred.

Inspector *Henry Rudd* is in charge of platforms Nos. 1 and 2 at Bristol station, in the service of the Great-Western Railway Company. He had formed a train of three first-class and five second-class carriages to carry excursion passengers to Weston-super-Mare. He brought it up to the D cabin, and asked for a signal to back it into No. 1 platform-line, to be loaded with passengers. This was about 10.30 a.m. The signalman in D cabin having received permission from the signalman in the other (C) cabin for these carriages to be backed into No. 1 platform line, he called the train back to the platform accordingly, and loaded it with passengers for Weston-super-Mare. After the train was loaded he walked up the platform to the C cabin at the east end of it, and saw the signalman on duty there, Charles Luton. He asked Luton whether the 9 a.m. train from Swindon or the Clifton train was signalled. Luton replied that neither of them had been signalled. He said to the signalman, "I have a train waiting for an engine to take it to "Weston-super-Mare standing at the end of No. 1 "platform line; I should think we might caution the "Swindon train in behind it, as there is plenty of "room." Luton replied, "All right;" and witness left the cabin to find how late the train from Swindon might be. He found the Swindon train was, as he fancies, 32 minutes late from Chippenham. He went to the crossing on the south of the station, and despatched a porter to the locomotive-shed to say that the Weston train was waiting for an engine, and to hurry the engine back to the train. In turning round to look up the platform he saw the Swindon train running in, and that a collision was unavoidable He rushed up the platform, and the collision occurred as he reached the excursion train. He found the people all rushing out of the carriages. He attempted to keep the doors shut, and the principal part of the damage was done by the people being partly in and partly out of the coaches. He thinks that if they had kept their seats there would have been very little injury done. He does not think the Swindon train would have stopped at its proper place on the platform from the speed at which it was going. The driver was doing all he could to pull up. It is a constant practice to back trains in the same way into the station, and it is a constant practice to occupy the down line with one train, and to allow another train to run in behind it. It would be impossible to carry on the traffic at the station without allowing one train to run up at the back of another at the platform. He had nowhere else to put this excursion train, and could not avoid its being in the way of the Swindon train. There was sufficient length for both trains at the platform.

William Hutton has been in the service of the Great-Western Railway Company for 32 years, and all the time at Bristol. He has been signalman at the B cabin since it was opened. At 10.48 yesterday he received notice of the approach of the 9 a.m. train from Swindon, and lowered his distant and home signals for it to run into the station in the usual way, and the slot was taken off from the C cabin to enable him to do so. He asked leave from the C cabin in the usual way, and it was after he had so asked leave that the slot was taken off. It was on receiving notice from A cabin that he asked for permission from C cabin to allow the train to run into the station. He never saw a train coming in faster than the Swindon train did on that day. That train generally gets a clear run into the station with the home and distant signals off from B cabin. It appeared to him to be coming in a great deal faster than usual. When the train was about 40 yards from B cabin he saw a green flag being held out from the C cabin, and also by the groundman between his cabin and the station. He therefore went to his window, which was wide open, and held up his hand, and shook it to the engine-driver by way of cautioning him into the station. The engine was 15 or 20 yards from his cabin when he did so. He could see the driver's face and the fireman's face as he did so. They were looking straight out of the side of the engine towards the station. The driver and fireman could not have seen him because they were looking towards the station. He hallooed out, "Steady mate, steady mate," as the driver passed him. The driver did not look up in answer. As the Swindon train approached he was standing over where the driver was, and his mate on the left hand, over where the fireman was. His mate called out and waved his hand exactly in the same way as he did. He did not know that there was any obstruction in the station, because nothing had gone in from his end of the station. The only information he had was the green flag from C cabin.

George Withey is the assistant-signalman in B cabin, and has been there ever since it was opened, six weeks ago. He heard the Swindon train signalled, and the signal sent forward to C cabin, the slot having been pulled off for it. His mate pulled off the signals to admit it into the station. When he saw the train leaving the South-Wales Junction he thought it was not going to pull up at the station, it was going so fast. He thinks it would have run through the station if there had been nothing there. His mate said "They are showing a green flag at the crossing, there is something the other end of the platform;" and they both went to the window of the cabin, and held out their hands to caution the train in, and hallooed out at the same time "Steady there, steady in." He saw the driver and fireman as they passed, but he does not think either the driver or the fireman saw him or his mate. They were looking straight before them towards the station. They were not 20 yards from the cabin when he held up his hand and hallooed out. He was standing at the farther end of the cabin from the entrance, in the corner, when he waved his hand to the Swindon train. His mate came to the window with him, and stood furthest in the corner, and he was on the left of his mate. He did not see any flag at the C cabin, nor did he notice the flag at the crossing until the train had come inside the South-Wales Junction. He believes the train was going at 20 miles an hour when it passed his cabin.

Charles Luton, signalman on duty at C cabin, received a signal from B cabin about 10.52 for the Swindon train to come into the platform. He pulled over his signal-lever, to take off the slot, to allow the signalman in the B cabin to take off his signals to let it in. He could see from where he was standing at his cabin that there was a train standing at the further end of No. 1 platform. He therefore told the ground-policeman to caution the Swindon train in with a green flag. He also held out a green flag himself to caution the engine-driver, and he did so when the train was a quarter of a mile from him. About a quarter of an hour previously he had been asked permission by telegraph from the D cabin to allow the train standing on No 1 platform to be backed into that line, and he had given the permission. Inspector Rudd had also come to him, two minutes before the Swindon train was signalled, and asked if the Swindon train had been signalled. He replied, "No." Rudd rejoined, "Let her in on No. 1 behind the special train." Rudd said nothing to him about cautioning the train in, but he told Rudd, "All right; I will caution the train in." It is a daily practice to let one train run in behind another at both No. 1 and No. 2 platforms. If a train standing at the platform line was at the east end of the platform, he would not lower his signals to let one train run in behind the other. With almost every train he shakes up the instrument to B cabin to caution a train in, and then they hold out a green flag at B cabin to caution a train in. He had no need to do so on this occasion, because he saw the men there holding up their hands at the time that the train was several yards above their box. He has heard since

that they did so. He should have undoubtedly wired to B cabin to caution the train in if he had not seen the signalmen waving their hands.

Charles Crabb is ground-policeman at the east end of the down-platform of Bristol station. He is engaged in keeping the crossing clear of passengers, and signalling the trains into the station. He knew that No. 1 platform-line was occupied by the carriages of the excursion train, because, on looking round in that direction, he saw the carriages standing there. Signalman Luton told him that the Swindon train was coming, and told him to go down the line a little way, and steady them with a flag. He went 9 or 10 yards from the crossing, and met the train coming in. He held up his green flag, and waved it when the engine-driver came in sight. He saw the engine-driver; he was coming in rather fast,—faster than usual. It struck him after he passed that he had been going rather faster than usual. He does not think the driver would have stopped at his place at the platform if the collision had not occurred. He saw a green flag held out from C cabin, and heard signalman Luton calling out to the engine-driver. He cannot exactly say what words he used. He heard the engine-driver blow the break-whistle after passing him about 30 yards.

Conclusion.

This collision has then occurred between a narrow-gauge passenger-train from Swindon, due to run into No. 1 platform-line at the Bristol station, and eight carriages of an excursion-train which had been prepared and loaded with passengers for Weston-super-Mare, and which were standing in its way on that platform-line.

The engine-driver of the Swindon train received the all-right signal from the distant and home signals of the B cabin, and had every reason to believe up to the time of his passing that cabin that the line was clear to run into the station. The signalmen in the B cabin, who state that they waved their hands and hallooed to him as he approached that cabin, evidently did so, by their own admission, when it was too late to attract his attention, inasmuch as, in looking towards the station which he was approaching, he could not see them in their elevated position. The signalman in the C cabin held out a flag to the engine-driver, which he did not see; and the only warning which he received of anything being in front of him in the station was from the green flag of the ground-policeman. This green flag was, however, only held quietly up, and did not give him any idea of obstruction until he saw the last carriage of the excursion train.

It is quite possible that this engine-driver may have approached the station a little faster than usual; and it would hardly appear that he attached as much importance as he ought to have done to the green flag of the ground policeman; but it is difficult to blame him for the collision, considering the small amount of warning that was afforded him.

The signalman in the B cabin did not know that the line was obstructed at the station, and only surmised that a caution was necessary on seeing the green flag exhibited from the C cabin, and by the ground policeman.

The signalman in the C cabin was aware of and could see from his cabin the obstruction, and he ought not, perhaps, to have taken off his slot for the in-coming signals without affording any warning to the signalman in the B cabin of the obstruction at the station.

It is not a desirable mode of working, to allow excursion trains to be loaded at a station on a line on which other trains are due to run into the station; but, unfortunately, the restricted amount of accommodation for the formation of trains at the Bristol station necessitates the practice of running one train in behind another being daily resorted to.

So long as, for want of sufficient accommodation, trains are obliged to be kept standing at the station on lines on which other trains are due to arrive, it appears to be desirable that the arriving trains should be more effectively warned outside the station; and, in fact, that danger signals should be kept against them, instead of a green flag being merely held up by a ground-policeman.

But much more is urgently required. Not only does it become necessary in the working of the traffic to place two trains on one line; but as many as three trains are frequently obliged to be marshalled at, or backed into, or drawn into, one platform-line at the same time. And, looking to the present requirements and future development of the traffic, it is quite evident that the accommodation now provided in the Bristol station, as it is at present being completed, is insufficient for safe or convenient working. It is a daily and even hourly occurrence that trains are delayed outside of this station in consequence of the inconvenient arrangements under which the various trains in shunting are backed or otherwise taken in and out of it.

There is a scheme for constructing a dock-line at the west end of the station, which, if carried out, will no doubt afford considerable relief; but better arrangements and further extensions will still be required; and it is only right to add, in connection with this accident, that there is a turntable, which is turned by horses, dangerously situated in connection with a steam-crane for landing timber within a few feet of the line over which the Swindon train and all other trains run in approaching the station-platforms. This turntable should be immediately disused, or it may lead to some serious accident.

I have, &c.,

H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 30th August.

GREAT WESTERN RAILWAY.

Sir, *Bristol, 15th August* 1876.

In compliance with the instructions contained in the Order of the 29th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident which occurred on the 27th ultimo, at Long Ashton, near the Bourton station, on the Bristol and Exeter section of the Great-Western Railway, to the up-express passenger-train, known as the "Flying Dutchman," timed to leave Exeter at 10.30 a.m. for London.

This train was running down a falling gradient of 1 in 200, and round an easy curve to the left with radii of from 170 to 200 chains, at a speed of about 60 miles an hour, when the off-leading wheel of the leading bogie-truck of the engine mounted the off rail. The other wheels of the engine left the rails in quick succession, and the engine struck and crossed the down line. After striking the slope of the cutting beyond, and turning over and over, it came to rest on its side 527 feet from the point at which it first mounted the rail. The van and carriages, released from the engine by the breaking of the couplings, continued on their course, and came to a stand 170 feet beyond the engine, with the last vehicle nearly opposite to the engine.

Three of these vehicles also left the rails with all their wheels, viz., the break-van next behind the engine, a composite-carriage second from the van (which rested on its near wheels, with its off wheels raised in the air), another composite-carriage, fifth from the van, and the last carriage of the train.

The engine-driver and fireman of the train were killed, and 14 passengers and two servants of the Company were injured.

The engine and the body of the van next to it were very much damaged. The first carriage was slightly damaged, the second (which left the rails) had all its steps, axle-boxes, and windows broken, the next carriage was slightly damaged, and the last two vehicles of the train had some windows broken.

I enclose a plan of the line, diagram No. 1, on which is shown the position of the engine and carriages after the accident; and drawings of the engine, diagrams Nos. 2 and 3, with which the Company have been good enough to furnish me.

The following is the evidence in regard to the accident:—

Evidence.

Mr. T. W. Walton said he was superintendent of the Bristol and Exeter division of the Great-Western Railway, and visited the scene of the accident a quarter of an hour after it happened. The train was the fast express due to leave Exeter at 10.30 a.m. It consisted of an engine, 2001, a six-wheeled passenger break-van, No. 21, and five Great-Western composite carriages. The train was due at Bristol at 12.4. Taunton was the last station at which it stopped. Its correct time for leaving Taunton was 11.9, but it did not leave until 11.29. It passed Bourton at 12.13 p.m. It ran from Taunton to Bourton, a distance of 39 miles 45 chains, in 44 minutes, or an average of 54 miles per hour. The engine was an old Bristol and Exeter nine-feet driving-wheel bogie-engine. Between Taunton and Bridgwater, 15 miles 35 chains, the speed averaged 52 miles per hour; between Bridgwater and Highbridge, 6 miles 25 chains, the speed was 54 miles an hour; between Highbridge and Weston junction, 8 miles 50 chains, 51 miles per hour; between Weston and Yatton, 6 miles 35 chains, 55 miles per hour; and between Yatton and Bourton, 6 miles 60 chains, the speed was 57 miles an hour. The distance between Bourton and the scene of the accident was about 77 chains. The train arrived at Exeter from South Devon two minutes late. It was delayed at Exeter three minutes, and started from that place five minutes late. It lost 15 minutes between Exeter and Taunton. The 9.45, which preceded the express from Exeter, was very heavily laden, and on its arrival at Taunton there was not room in the ordinary siding, and it had to be divided and shunted into two sidings. The express was detained in consequence. It was signalled at Silk Mills, the nearest block-house to Taunton, as waiting at 11.9, and it arrived at the platform at 11.24. The train ran at its proper speed from Exeter to Taunton. The guard estimated the time of the accident as 12.17, and the train was keeping her proper running time. The guard alluded to was Watts. The time allowed for the run from Bourton to Bristol was eight minutes. It passed Bourton at 12.13, being due there at 11.56—17 minutes late. The whole of the Bristol and Exeter division was worked on the absolute block system, and the very best locking apparatus that could be obtained was placed at every station over the line, with the exception of five small branch stations. A very large expense had been gone to to carry it out. During the whole of the time the fast express had been running the Company never had any cause for anxiety, except in the recent case at Hele, when the leading wheel of the front carriage left the rails. A train ran at nearly the same rate of speed in 1862, and was running for years.

Mr. J. W. Pearce, surveyor of the Western division of the Great-Western Railway, produced a plan and section of the line at the scene of the accident. He also produced a plan of the line from Taunton to Bristol, and explained the gradients. The accident occurred on a gradient of 1 in 200, descending towards Bristol. He considered that portion of the line, so far as the curves were concerned, a very safe line for a train to travel over at a rate of from 50 to 60 miles an hour. Was not in a position to report as to the permanent-way.

Harry B. Salter, station-master at Bourton, recollected the "Flying Dutchman" passing Bourton on Thursday last. He was in the block-hut when it passed, but he did not notice that it was going faster than usual. It passed at 12.13 p.m. The accident was $1\frac{1}{4}$ miles further on. Witness went to the scene of the accident half an hour after.

Thomas Hayes, signalman at Bourton station, remembered the "Flying Dutchman" passing Bourton on the 27th of July. Was on the platform when it passed. Was going to dinner. The "Flying Dutchman" was signalled from Nailsea. Noticed nothing more than usual in the train when it passed. The staff at the station consisted of himself and last witness. They had to issue tickets and attend to the luggage. They usually relieved each other when they went to dinner. They chose times to go when there was not much doing. Was appointed signalman in February 1873, and was then 16 years of age.

George Hassam, guard on the Great Western Railway, said he worked the "Flying Dutchman" as second guard on the 27th July. Joined it at Exeter. They left there three minutes late, owing to some excesses being taken. He rode in the last break-van. They were outside Taunton station eight or ten minutes. After leaving Taunton they did not stop again until the accident. Did not notice anything unusual in the travelling of the train. There were three breaks attached to the train, including the engine-break. They were old-fashioned, and not continuous breaks. Remembered the bridge where the engine was supposed to have left the metals. Did not notice any difference in the travelling of his break until about half a minute before the smash. There was then a violent oscillation which threw him out of his seat. Did not hear the engine-driver blow the break-whistle. The steam was pouring into the window, and it was perfectly dark. He knew they were off the line, but did not know to what extent. He got out of his break. The passengers in the next compartment were screaming, and when the steam passed off they got out in all directions. He saw the two deceased on the ground, one dead and the other dying. They were not far from his van, which had passed the engine. They were 10 or 12 yards from the engine. He saw the front guard's van lying across the metals, knocked all to pieces. It ought to have been next to the engine. There were three or four carriages on the line. The engine was about 20 yards on the Bourton side of his carriage. It was turned over, and steam was escaping violently.

Mr. A. Stannard, C.E., Southmolton, said he was travelling from Taunton to Bristol, on the 27th, in the "Flying Dutchman." He frequently travelled by it. Did not notice anything unusual in it until the moment of the accident. He was travelling in a first-class compartment in the second carriage from the front guard's van. He first of all felt a slight shock, which he knew was not a break shock. He held on by the middle arm-rest of the carriage, and he called out to the other passengers to hold on. In a few minutes a gush of steam came in at the windows. They had passed the engine, and a moment after something struck the bottom of their carriage, and turned it over at an angle of 45 degrees. He subsequently found that it had been struck by the bogie part of the

engine. One of the passengers got out of the window. He opened the top part of the window, and got out, and helped the others out. He went down the line, and saw the guard John Watts. Knowing the down express was due, he took the flags from Watts, and ran up the line to meet it. He did so at the first bridge under the line on the Bristol side. He stood on the stone parapet and made the signals, which the driver saw. The train was pulled up 200 yards after it passed him. He went up to it, told the guards what had happened, and asked them to come on with a carriage and the engine to take up the wounded. They did so, and were soon back at the scene of the accident. Witness then assisted the passengers to find their luggage. At the time he received the flags from Watts he was giving them to an elderly man. He did not see any other person with flags going to Bristol.

Richard Pattison, foreman over one of the erecting shops at Swindon, said he was immediately connected with the locomotive department. He had lately had the engine of the "Flying Dutchman" (No. 2,001) under his notice. It was brought to the works at Swindon for repairs. It came into the shop on March 31st, and left Swindon July 15th. When he sent it out it was in thorough good working condition. To all intents and purposes it was as good as a new one. He saw the locomotive that morning for the first time since. It was a complete wreck. It was thoroughly overhauled when it was repaired. It previously belonged to the Bristol and Exeter Company, and was in the Swindon works for the first time when he saw it.

Matthew Robinson, district superintendent of the locomotive and carriage department on the Bristol and Exeter section of the Great Western Railway, said he recollected the engine being brought to Bristol on the 15th July, after it had been repaired. It remained at Bristol till it commenced work on the 18th. He examined it carefully on the 15th; it was in very good condition. He saw it under steam. On the 25th he was underneath the engine, his attention having been called to the cleaning, and its condition was then very good. He saw the engine within 10 minutes of the accident. It was then lying on the down line on its side. He examined it very carefully. He did not see anything connected with the engine that would lead him to account for the accident. He examined the spot where the engine first left the metals. He thought it was about 160 or 170 yards from where the engine left the metals to where it turned on its side. He noticed that there was a flat place on the metals, as if it was worn on the top with wear and tear. It was worn to the extent of a sixteenth of an inch, and over an area of about two inches. He noticed a "spring" on the sleeper, a little on the Bourton side of this metal. The spring was on the adjoining longitudinal sleeper. The sleeper gave way under his weight when he stepped upon it. The sleeper underneath the metal seemed to be firm. He had carefully examined the engine since the accident. He had not been able to detect anything about the engine that would account for the accident. He knew nothing of the previous history of the engine. He had run at high speed with the engine, though not on this fast train. She was a particularly steady running engine. He examined the permanent way about two hours after the accident. He noticed the marks on the rails and sleepers, and could plainly trace where the wheel first mounted. He could not see how the flange mounted the metal. He could trace the mark for perhaps two feet along the top of the rail. At the end of this marking the wheel dropped on the longitudinal balk, outside the off-rail. There were also three marks further forward on the metal. Seeing that there was no mark on the metals showing how the engine mounted, he was not in a position to account for the accident. The springing movement of the longitudinal sleeper in his opinion would not be the cause of the leading-wheels of the engine mounting. There was a little bulge in the inside of the off-metal. There was nothing more that he could see immediately after the accident but what Capt. Tyler could see when he made his examination. He had travelled on a fast train with this locomotive on the line between Taunton and Bristol. He had not noticed anything unusual down this incline. At the point where the accident happened was where steam was usually shut off. It was the first upward journey that the locomotive had taken with the "Flying Dutchman." He had never had to make a complaint of the state of the road. He has heard engine-drivers make complaint of the state of the road. They have never complained of any road except what they call the "iron road," which makes the engines rough to ride. It is a good, firm road, but makes the engines very bad to ride upon. The complaints have not been in writing. It is a general complaint throughout the whole that the iron road is hard and stiff. The iron road is constructed with metals laid on a sheet-iron plate. It was iron used in the place of the wooden longitudinal sleeper. The drivers had never complained about the wooden parts of the road, nor had he had any complaints except those to which he had referred. The drivers were not in the habit of shutting off steam before they got to the bottom of the incline. This engine was one of six which worked round the fast trains from Bristol to Exeter. There was only another engine of this double-bogie pattern out of the six which worked the fast trains. They kept time as well as the others. He would conclude that whatever caused the engine to mount must have been of a very slight character, because the mark of the flange continued in an almost parallel direction for a short distance. He saw an engine go over the sleeper that had the spring, and noticed that it "sprung." The packing under the sleeper was a kind of "slag." Ashes were mixed with it, and it made good packing The "Galloper" had come over the same metal and sleeper at the same rate of speed since the accident. The engine had run 1,256 miles in all, in six trips, from the 18th July. It had the same driver for each of the six trips. It passed over the same rail and sleeper in each journey. The "iron" road was about 10 miles from the scene of the accident. Some repairs were done to the engine the day before the accident. He produced the description of the repairs required. "Right-hand centre trailer (trailing bogie) axle runs hot; top of the fire-box leaky, very bad under the casing. Signed, Dunscombe." All these repairs were done. Dunscombe had never complained that the engine was not in a fit state to drive these fast trains. He made no verbal report of the engine running hot. When the engine was fully equipped with coal and water, it weighed about 49 tons. When the permanent way was bad, the springs of locomotives were sometimes broken in consequence.

William Stewart, assistant superintendent to the locomotive running department, said that on the 27th July he rode on the engine of the "Flying Dutchman" from Taunton to Exeter, with the deceased men. The engine ran very well. He had no special cause for riding on the engine on that particular occasion. The connecting-rod brasses were fretting a little bit. The road felt very good. The highest speed they went at was over 50 miles an hour. He asked Dunscombe how the engine was working, and he said she was working very well. He made no complaint about the engine. A few complaints had been made to him with regard to the permanent way during the last few months. One driver reported that there was a bad place on the line near Collumpton. Another driver complained last month of the road near Bridgwater, referring specially to the slack in the line. The part of the road that had been most complained of was near Yatton, both iron and timber road. The engine-drivers have instructions to report upon their train-tickets anything relating to the permanent way. He did not think that the drivers ran over the

part where the accident happened faster than on other parts of the line. They always slackened at Portishead junction. Dunscombe was a careful, steady man, not likely to run any risk by driving at a very high rate of speed. He was one of the most efficient drivers they had. The drivers had no particular instructions to shut off steam at this point. It was left to the drivers' discretion. If the train were travelling at a very high rate of speed, steam would probably be shut off at the spot where the accident happened.

Mr. Charles William Dymond, C.E., said he was a passenger on the 27th ultimo from Bristol to Weston. The train was delayed at the Portishead junction, and he heard of the accident. He reached the scene of the accident within an hour. Having described the state in which he found the carriages and engine, he said his attention was directed to four marks upon the inner up-rail, about 150 yards behind the carriages. The first of the marks was a worn place in the rail, and immediately beyond that a wheel had risen up to the crown of the rail, a short distance after which another wheel had mounted, and still further a third wheel. The first two marks were slight, but the third was much heavier, and when that left the rail the timber was cut to pieces in its track. The distance between the first and third mark was about 30 yards. The permanent way was in what he would call a good condition. He had noticed a spring in the longitudinal sleepers, and it was a general thing when trains passed over them. A sleeper ought not to spring under the weight of a man. If a spring amounted to an eighth of an inch, or even more, it would be practically safe; if it was an inch he should consider it unsafe. He could see nothing that would lead him to come to any conclusion as to the cause of the accident. The metals appeared to be level, excepting the worn place, which seemed to be a little hollow—about an eighth of an inch. He does not consider a speed of 60 miles an hour an element of danger if the permanent way and rolling stock generally are in good order. The rail referred to appeared to have been down a considerable time. The surface was not bulged or "squeezed," but the top was worn off. The depth of a carriage-flange was about an inch. He had been connected with the Bristol and Exeter Railway as engineer, but was now in private practice at Weston.

Edward Wilkins said he was ganger of the section of the Bristol and Exeter line where the accident happened. His length was from 121 miles 10 chains to 123¼. He went over it the first thing in the morning, and on the morning of the 27th July he started to go over it at seven o'clock. He examined it carefully. He noticed all defective rails on the section, including the one where the engine first left the metal. He found that one was not bad enough to be taken out. A week before the accident he noticed that it was defective. The permanent way was perfect to gauge at the spot. He gauged that spot about a month before. The road was in good order as to packing. He has been a ganger two years, and has been 23 years on the same length. He has six men besides himself for the 2m. 10ch. During the first quarter of this year they had not sufficient spikes, bolts, &c., but have now. They asked their inspector for the materials, but he could not get them. They were short of rails, and had no sleepers. About the beginning of the second quarter they were better provided. There were still some fastenings wanting to be renewed. There are not sufficient hands to keep the work up. He has wanted material and men ever since the narrow-gauge rails were put in, and has been asking the inspector for more materials, but not for more men. The road is not so good as he should like it, but is as good as the men and materials at his disposal will allow. There are rails, timbers, and fastenings wanting to be renewed. The ballast has been very rough. Since the introduction of the narrow gauge his work has increased. New metals have been added, and he has only obtained one extra man. It is his practice to renew defective rails as soon as he can. He cannot pack so well since the new narrow-gauge rails have been put in. The ballast comes from Ashton Vale; it is mixed ash and lumps, and some of the lumps it is impossible to break. Sometimes he works in the course of one week three nights overtime. If he saw a bolt loose he should deem it his duty to replace it. He had plenty of men and material just before the amalgamation.

The witness *Wilkins* was recalled, and stated that the cant he gave at this particular portion of the line was three inches and "some odds." The cant in the middle of the curve where the accident took place is 3¼ inches. They had always made the cant at that height since he had been on the line. The rail must come gradually down to break into the straight. The answer he gave about three and some odd inches was because he saw the measurements taken after the accident. He cannot tell the number of inches the cant of the curve ought to be. Has always kept it the same as it used to be. He has never been told what the greatest cant ought to be at this curve, and does not know what it used to be. Could tell whether the cant was right by seeing the train run steadily over the curve. If he saw that the flange of the wheel was rubbing on the outside rail, he would try the gauge; and if the gauge was right he should be satisfied, and he should not alter the cant. Considered the road at the time of the accident to be in a fair running state. Still thought he had been deficient of material and labour. For six weeks he had been deficient of fang bolts. That was in July. At the time of the accident they had plenty of fang bolts. He had told Mr. King more than once that he was short of material. Mr. King could not get the material.

John King is an inspector of permanent-way on the Bristol and Exeter section of the Great Western Railway, from Bristol to Clevedon and Weston, 24 miles altogether, and has been so for 15 years. He is under Mr. Cooper. He considers Wilkins' section to be in very fair condition. He goes over every portion of his district once or twice a week, and last went over Wilkins' length on the 25th July. He noticed defective metals there, and in one metal an indentation of $\frac{1}{16}$th of an inch where it had been worn on the top. He did not notice that the longitudinal under that rail towards Bourton gave any spring under weights. Ballast on the length was short, but where the accident occurred it was perfect, having been packed up about a week before. The narrow gauge has increased the work more than is met by the addition of one man to the length. Two extra men were required, one for each new rail. The packing is made more difficult. On the introduction of the narrow gauge, he consulted with the late inspector Rodbourne, and they agreed that 14 extra men were needed for the district, but only 10 were granted. Mr. Fox was then the engineer of the line. At the time of the amalgamation they had some difficulty in getting materials; that was about 1st January 1876. Perhaps two months elapsed before they got a proper supply. They had run too close with the materials toward the end of the Bristol and Exeter time, and it was about six weeks after the Bristol and Exeter Company handed over the line before they could get material. About a month after the 1st January they began to replenish, and had timber, rails, and fang-bolts. During that interval the platelayers were packing, screwing, and using what they had. In July he had all he wanted, but he was short for the first six months of this year; sometimes more, sometimes less. He could have kept the line better if he had had more men and material. After the ten extra men were allowed him he complained on several occasions that they were not enough. There were a number of men on the line last Monday week (31st July), between Bourton and

Bristol, breaking the ballast under Mr. Cooper's instructions. They were ballasting the road when the accident occurred, and at that time the ordinary men were breaking the ballast. The extra men employed in breaking ballast had been drawn from other gangs. There may have been 50 men between Bourton station and the scene of the accident. He thinks the line was in a safe state for running at the time of the accident. Ashton Vale material is unsuitable for ballast. It ought to be broken before being brought on the line, as the breaking of it gives the men additional labour that they ought not to have. The Ashton Vale ballast is capital stuff when properly broken. Lately that ballast has been like lime. It is difficult to break the lumps. The transoms are fixed to the longitudinal sleepers by strap bolts, which are as strong as they ever were. Three months before the amalgamation he had all the men and materials he required. Six weeks after the amalgamation he was deficient in material, and the road became inefficient, and he has not been able to pack the road as he could wish it. He asked Mr. Clark, the stores inspector, for more material, who said they were running out, and he could not get any more. It was the 19th April when he got the first lot, and that was only three weeks' or a month's supply.

John King, the inspector, re-called, said the system of keeping the elevation round the curves was guided by the running of the train. Had no measurement given with regard to the cant. At times he gave Wilkins orders as to the cant, but did not give any particular orders with respect to the curves in this instance. He used the spirit-level in taking the cant. If he found the inner edge of the outer rail was rubbed by the flange of the wheel, he gave the rail a little more cant. He considered the line was in good working order. The levels taken by Captain Tyler showed irregularities that ought not to have existed. The curve should have shown a uniform drop to where the curve changed. He had no means of knowing what the cant ought to be at the curve, except by his own judgment. It was not a regular curve, and it was difficult to give a cant at an irregular curve. Since March, when he had the ordering of the material himself, he had a good supply. During the laying of the third rail, witness and his men were constantly taken away from their work, so that they were unable to properly perform their duties. He had not since recovered the ground he lost then. Since the narrow gauge had been laid down, the number of trains had been greatly increased, and it was now difficult to get the material from one place to another, and they could not now so easily lay down new sleepers. He explained that there was a difference in the delivery of material now as compared with the system before his illness. When he got over his illness he found the materials were short, and he applied to the inspector of stores, Mr. Clark, and got what he required. If he had had more men to put in the materials probably he would not have had such a stock on hand as he really had on June 30th. The principal time that he was short was just after his illness. He was ill in January, when the bulk of the materials were received.

Mr. Francis Fox, C.E., principal engineer to the Bristol and Exeter Railway till the amalgamation, and in responsible charge of the whole of that line till March 31st, explained the mode of ascertaining requirements and issuing supplies under the old system. An inspector was constantly employed in going over the line, and witness was in a position to assert that at no time was there a deficiency in rail or timber permitted on the Bristol and Exeter which would cause any length of line to be neglected. His orders were peremptory that no inspector should be kept short of rails. He could assert that there never was a time within the last 21 years, down to December 31, when any inspector could give as a reasonable excuse for his length of rails not being in good order that he was kept short of rails. The inspector (King) had been ill several weeks early in the year, during which a large quantity of materials had been delivered. He had examined the spot where the accident occurred, and he could give no cause for the accident. He certainly believed that the engine left the rails first, but not at the point where there was the abrasion of the rail, which he thought was not sufficient to account for the accident. He thinks that the statements of inspector King and ganger Wilkins were inaccurate, and not warranted by the facts. He considers they had everything in the way of men and materials to maintain the line in good condition. If not, it was their own fault. In July 1875 the third rail was put in, and handed over to the men for maintenance. He was then asked to allow an additional number of men by the inspectors generally. It was true that King asked for 14 men, and only got 10 for his section ; but gangers and inspectors did not generally ask for too little, and it was the duty of the engineer to see that he did not supply the gangers with more men than was proportionately necessary for their length of line. He made enquiries, and found that 10 men would be a sufficient number for this section, compared with the proportion on other parts of the Great Western line. It was, he considered, quite a sufficient number of men for a good careful ganger to keep his line in good condition. He considered the ballast good ballast, and in the condition in which it was now found he thought it was possible for the men to use it and keep the road in reasonably good condition, as it had been used for years past. Nothing was paid for breaking it ; it was sent as taken from the heap at the Ashton iron-works, and there was no provision in the contract for breaking the "slag." It was not a material that blended well, and it would be a bad thing if it were, as they required something open and suitable for drainage. After what Wilkins had stated at the last sitting, he would rather not give his opinion as to whether he was a careful ganger. Wilkins had been 23 years in the Company's employ, and latterly had been promoted to ganger. He appointed an inspector, whose duty it was to keep gangers and inspectors informed of their duties, and to make reports to him. It was witness's principle not to let gangers and inspectors have cause to say they could not keep the line in good condition through want of material. Could not give any decided evidence as to whether the rail referred to as defective was the cause of the accident. He did not pay the close attention necessary to see whether the abrasion was a bulge, or simply the result of wear. He did not go there as an officer, and therefore did not go into this minutiæ. From his recollection, he should say it was not a rail to be removed as dangerous. The curve where the accident occurred has 200 chains radius, and for a speed of 55 or 60 miles an hour there should be a super-elevation of an inch, or one inch and a half. He noticed the longitudinal levels, but did not gauge them. They appeared to be good. He saw a gentleman standing on the longitudinal sleeper under the particular rail, and springing it about a quarter of an inch. As far as he remembers, he had no difficulty in getting money, men, or materials for maintaining the line. He handed the railway over in very fair condition. It had been a little knocked about by the new gauge. He had charge of the line for upwards of 21 years, and during that time no accident had occurred causing loss of life.

Mr. James Caley, civil engineer, living at Bourton, said he went to the scene of the accident, and traced the marks on the line to the point where they first began, and there saw an imperfection upon the off rail where the first wheel appeared to have mounted the metal. About 2 ft. 9 in. from that on the Bourton side he found that a longitudinal had considerable "play" in it. He stood upon it, and it went up and down like a spring-board. There was fully an inch "play" of the sleeper. The imperfect rail was

attached to this sleeper as well as to another. One bolt was loose, and could be drawn out by a finger and thumb. Other bolts were not screwed up as tight as they should be; he noticed six or seven. Some of them could have been screwed down half an inch. Saw several trains afterwards pass over the imperfect rail, and noticed it kept sinking down beneath the weight of the engines. As the engines drew up to wait for passengers after the accident he noticed there was a working in the joint between the two rails of about the third of an inch. The imperfect rail was as it were hammered out wider on the inside, reducing the gauge at that point. Had noticed a great many other bad rails and imperfect sleepers in the cutting. He certainly did think these imperfections were sufficient, with the imperfect packing, to cause the accident; the depression of the rail, the reduction of the gauge, and the want of packing would be sufficient to cause such an accident. When the engine went over the rail the pressure was transferred partly to another sleeper, and therefore the depression was not so great as when he stood alone upon the part of the rail over the defective longitudinal. When Captain Tyler inspected it the bolts appeared to have been screwed up, and there had been fresh packing.

Mr. J. P. Elms, accountant in the engineer's office at Plymouth, stated that on March 31st, in King's district, there were 536 feet more of longitudinal timbers than on 1st of January, when there were 2,378 feet run of timber, which would be about two months' supply. He produced a return of items signed by King, the inspector, showing that he had in hand, March 31st, on his district, 2,914 feet of longitudinal timber. Taking the six months as a whole, King had an enormous supply of material, both rails and sleepers. He had four months stock delivered in January, comparing it with what he had in 1875. On January 1st, 1876, King had 2,085 feet of rails; on March 31st he had 6,884 feet on hand, showing that he had 4,799 feet more than he commenced the year with. On June 30th, according to King's own return, he had 15,686 feet of rails in hand, and 6,820 feet run of timber.

Mr. B. S. Cooper, district engineer of the Bristol and Exeter section of the line, deposed that he had been district engineer since April, but was assistant engineer to the Bristol and Exeter Railway Company for 20 years. He visited King's district about once a week, and looked to King for any information to guide him in his action as to that section of the line. He went over the whole 24 miles of that section about a month previous to the accident, and found it in good working condition. He saw nothing more than an ordinary number of defective longitudinal sleepers and rails. The scene of the accident was just off the straight between two "s" curves. The radius was about 220 or 230 chains. He looked to the inspector and the ganger for any information as to the longitudina level of the rails. That was part of the inspector's duty. Had heard the evidence of Wilkins and King as to deficiency of labour and materials, and he considered their statements were certainly not accurate. He considered they had ample supplies of both. If these men had noticed a "spring" in the longitudinal sleeper, it would have been their duty to have immediately repaired it. The ganger ought to gauge the metals every week, but there were no instructions to that effect. He reached the scene of the accident soon after 6 o'clock on the same day, and with the ganger and inspector he went with a gauge to the actual spot where the engine was supposed to have mounted. He had the gauge put, and it was just correct. He found the gauge on one side a little "wide." He did not take the longitudinal levels—only cross levels—at the scene of the accident. He should not think that, had the level not been quite correct round a curve of 220 or 230 chains radius, it would have been likely to cause the accident. Had not been able to form any opinion as to the cause of the accident. Did not notice any spring of the sleeper immediately contiguous to the point where the engine was supposed to mount the metals. The complaints of the men Wilkins and King had not come under his attention, and he considered the bit of line in question was sufficiently good for the fast trains running over it, and he did not think any blame attached to these men for any defect in the line. If he had passed there he should certainly have called on the inspector and ganger to watch the rail in question, but nothing further. The super-elevation of the rails rested with the inspector (King). Before April there was an inspector over King, but there was now no one between witness and King as to the responsibility with regard to this part of the line. Having seen the Government inspector's measurement, he then saw that the super-elevation or "cant" of the off metal was certainly not what it ought to be. He did not, however, think this was an element in the cause of the accident. He should certainly like to have it uniform. He left the measurement round the curves to the inspector, King. He was now district engineer from Bristol to Exeter, including the branches, and acted under Mr. Margary instead of under Mr. Fox. He certainly had a great deal more to do than he formerly had, and could not attend to minute details. The inspector, King, was quite capable of looking after the elevation; he was entirely a practical man, able to take ordinary levels required for super-elevation. He had known him engaged on the line for 25 years. He thought that King ought to have detected the lack of uniformity in the super-elevation of the rails. He had a level, and could use it. If King omitted his duty witness would be the person to call his attention to it, if it were within his knowledge. The line had been repaired, but not relaid as a whole. He should, however, think that the bulk of it had been virtually relaid in the course of time. He had known it for 21 years. In accounting for the want of uniformity, it was just possible that the ganger had given a greater cant at some parts of the metals than he ought to have done. He did not consider that the accident occurred owing to any defect of the permanent way. He was quite satisfied with the way in which the ganger and inspector performed their duties. He thinks one extra man quite sufficient since the introduction of the narrow gauge.

Mr. Peter John Margary, C.E., engineer of the western division of the Great Western Railway, which extends from Bristol to Penzance, said that on the Bristol and Exeter section he had Mr. Cooper to assist him as engineer. That section represents about 215 miles, with all the branches. He had taken to the division since the commencement of April. Considered he had sufficient help, and as much as over other parts of the Great Western system. He did not think that the irregularities or the unevenness mentioned in the rails could have thrown the train off. There must have been some other cause they had not been able to discover. The flange seems to have jumped on to the rail, there being no mark on the inner side of the rail, as of a gradual mount. He did not think the coning of the wheel had anything to do with the accident; but if the off wheels of an engine, when rounding a curve, do not touch the rail by the depth of the flange, the tendency of the coning to keep the wheels on the rails would be lost, but counteracted by the springs. The super-elevation is the great agent for correcting the centrifugal force, and 1½ ins. would be the proper super-elevation for the curve in question. He believed the engine was in good working order, and did not think any defect in it caused the accident. There might be many circumstances to account for the occurrence they had not been able to discover. The ganger should have had a spirit level, and occasionally check the "cants." The ganger was primarily responsible for the levels. There was greater difficulty in keeping up the levels on a curve than on a straight piece of line. All curves had not the same radii; the curves were carefully set out on the Nailsea

portion of the line by Mr. Froude. The curves were true, but the radii varied. The ganger ought to be very careful in every instance. The train had frequently run over the line at the same rate as it did on the day of the accident. He delegated the duty of looking after this portion of the permanent way above the inspector and ganger to Mr. Cooper. Mr. Cooper examined the condition of the line by riding and partly on foot. The inspectors ought to be frequently walking over some portion of the line, and occasionally to stay with the gangers and see that they did their duty. They had also the construction of works to look after, and to keep accounts. The inspector on this part of the system was a good practical man, but of course he was not expected to make calculations as to the cant. He thought the rails should not have shown the deviations in the level that had been found; but the rails had been disturbed, owing to the laying of the third rail, and they were now getting into proper condition again, and he had orders to put on men and do everything he possibly could to obviate what had occurred through laying the third rail. A bolt might have tumbled out, or the springing of the engine might have caused it to leave the rail. He is not aware of any other causes, but that is matter of opinion. There might have been a stone or a bolt lying at the side of the rail. If you doubled the want of uniformity in the longitudinal level that existed there certainly would be some risk; half as much again would not make much difference. It is difficult to define where the limit of safety ends. Wilkins would be primarily responsible for the want of uniformity in this part of the line, and King next. He thought there was some excuse to be made for them, as the ballast was rough, and with the longitudinal road it was difficult with such rough ballast to keep the levels perfectly true. Then, through the laying of the third rail, the ground was in a different condition to what it had been before. There was no deficiency of materials. They did not allow a certain amount to keep in repair a particular portion of the line; the amounts varied continually. The directors could not be liable for any want of materials. If Mr. Cooper said it was necessary to increase the number of men employed under Inspector King it would be granted at once without question. If King asked for 14 additional men, and had only an additional 10, the responsibility would rest with Mr. Fox. No complaint had been made at head-quarters of the expense of keeping up the permanent way. He did not think Wilkins had at first enough men under him, considering the state of the road, and the nature of the ballast, which was rough, but the best ballast they could get in the neigbhourhood. Taking also into consideration the laying of the third rail. He did not think the road was "tidy" when the Great Western Company took to the line; the ballast was not properly formed. The increase of the number of trains would hinder the packers in their work. Laying the third rail would permanently increase the work of the packers, in addition to making the packing more difficult.

John Watts, passenger guard in the employ of the Great Western Railway Company, said he had been working the Flying Dutchman, and was guard of that train on the day in question. He took charge of the train at Exeter, and arrived at 10.28, and left Exeter at 10.34, arriving at Taunton 11.22, and left at 11.27, and was stopped 11 minutes out of Taunton by the 9.45 train from Exeter. Everything went on all right till the accident occurred in the Ashton cutting, when he made the time 12.17. He could not say how he got out of his van; he was riding next the tender. They were going at their usual speed, and he noticed nothing before the accident occurred. As soon as he recovered himself he found his flags in the van, and took them up and walked towards Bristol, as he knew the 12.10 train had not passed them. He felt faint, and met Mr. Stannard, and asked him to go on and meet the train; and he heard afterwards that this was done. He heard the fireman say at Taunton, after the whistle was blown to start the train, that something was running hot. He did not say what that something was, and he did not start for half-a-minute. The train had previously travelled at the same speed over the part of the line where the accident occurred; and the line was always in perfect order. They could not make up more than a minute or two with that train. Had never received a premium for keeping good time, and never was fined for making up lost time, and had not been censured for doing so. He never went at the rate of 81 miles an hour. He would say that the train from Taunton to Bristol ran at its highest speed at the place where the accident happened. The train was running at the top of its speed when the accident occurred.

Mr. E. Wilson, C.E., consulting engineer to the Great Eastern and Metropolitan Railways, was also carrying out works for the Great Western Railway. Had over 25 years' experience in maintaining permanent way and rolling stock. Had examined the spot where the accident happened, and the highest elevation he got was $2\frac{3}{4}$ ins. on the Bourton side. Did not take the elevation at each transom. He took the elevation about a dozen times. Did not consider the difference of the super-elevations as given by Capt. Tyler an element of danger in the transit of fast trains. Did not think the want of uniformity had anything to do with the accident. He could give no cause for the accident. Taking the variations in the level stated by Capt. Tyler on the outside curves, he considered the line perfectly safe for an engine to travel over at the rate of 60 miles an hour. He found a great deal of rough ballast on the road, but it looked worse to an unpractised eye than it really was. He preferred slag ballast, and invariably adopted it when he could get it. There was no doubt that the ballast required breaking.

Observations.

This is an instance of the engine of a fast train, travelling at about the highest speed employed in ordinary traffic on railways, suddenly leaving the rails. The train had been running for nearly half a mile on a falling gradient of 1 in 200, after passing over a rising gradient of 1 in 200, and a short portion of level line between these two gradients; and it was approaching within 35 yards of the termination of an easy curve to the left, having a radius of 170 to 200 chains.

No evidence can be expected or procured from the servants of the Company in charge of the train, nor from any of the passengers, in explanation of the cause of the accident, excepting from the results of subsequent examination. The engine-driver and fireman are no more. The guards and passengers would have felt the sudden effects without knowing how they were produced.

But the evidence as to the subsequent indications on the permanent-way is tolerably complete. The rails, fastenings, sleepers, and ballast remained undisturbed up to a point on the off or outer rail of the curve, distinctly marked, and easily recognisable in consequence of a defect in the rail from the bruising or crushing of the material of which it was composed. From that defect forward there were marks on the rails, fastenings, sleepers, and transoms, still remaining when I visited the spot, or pointed out by competent observers as having been previously visible, which sufficiently demonstrated, on a careful observation and comparison extending over many hours, the cause of the accident. It was thus possible, commencing with the point where a wheel first mounted, to trace the paths of the off wheels of the engine, as they successively mounted, passed along or over, and left the rails on the off side; and, in a less degree, the points where the near wheels dropped inside the near rails; and then the path of the engine, when it

DIAGRAM No. 1.

GREAT WESTERN RAILWAY.

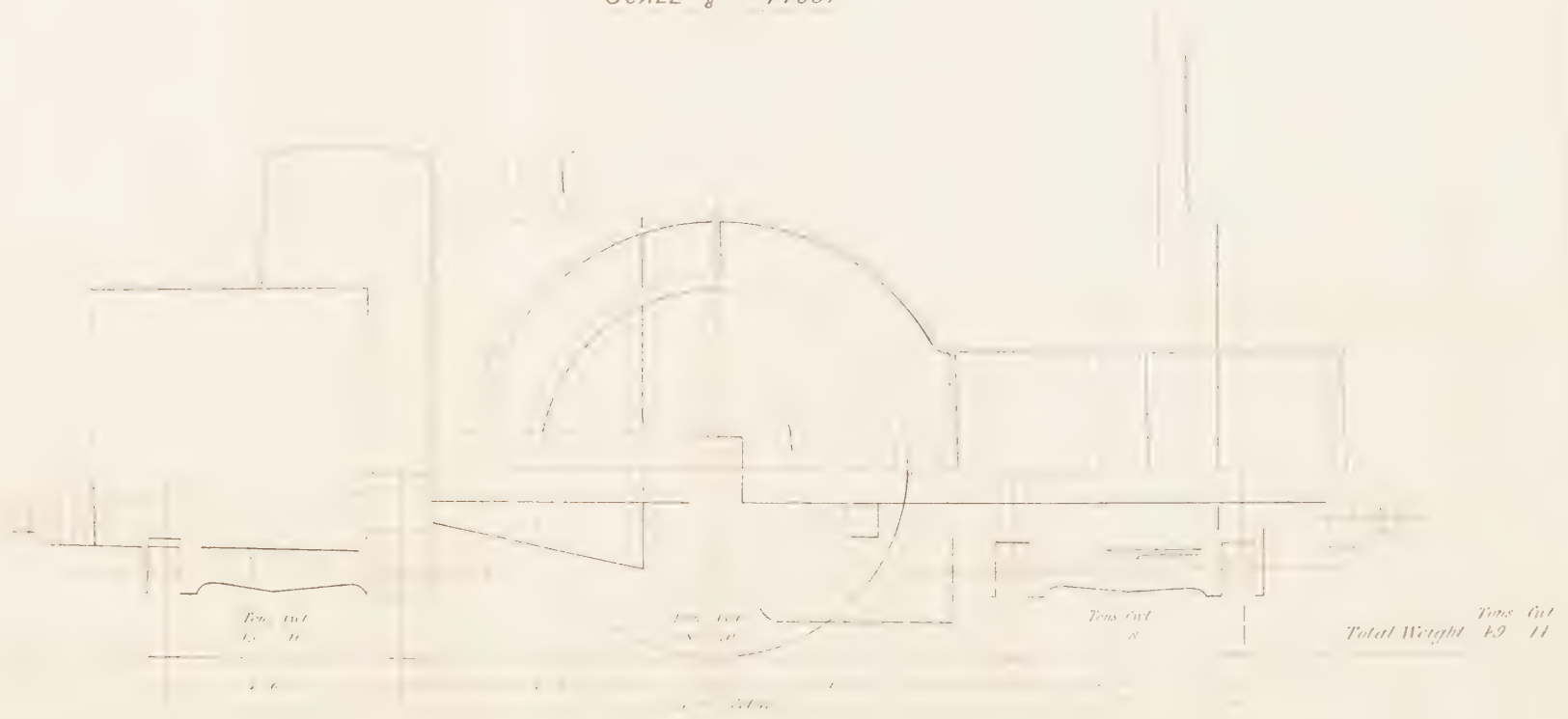


DIAGRAM N° 2.

To accompany Capt^n Tyler's report dated 16^th August 1876

G.W.R. B.C. PASSENGER ENGINE. N° 2001.

SCALE $\frac{3}{8}$" = 1 FOOT



Tons Cwt
Total Weight 49 11

23 6 Total Length

DESCRIPTION

Cylinders 18 Inches dia^r 24 Inch Stroke *Steam Ports* 1" 4½ × 1¼ *Exhaust* 1" 4½ × 2⅝ *Centres* 5' 6

Boiler 10-10 long 4' 2¼ dia^r Inside *Fire Box* 5-0 long 5-7½ wide (about)
(Inside) 4 2⅝ " 5 1¾ " × 5 7⅜ high

Tubes 192 Tubes 1¾ dia^r Outside

Wheels Leading 4-0" Driving 8' 10" Trailing 4-0"

Heating Surface Fire Box 147 Sq ft Tubes 1088 Sq ft Total 1235 Sq ft

Area of Fire Grate 23·1 feet (super)

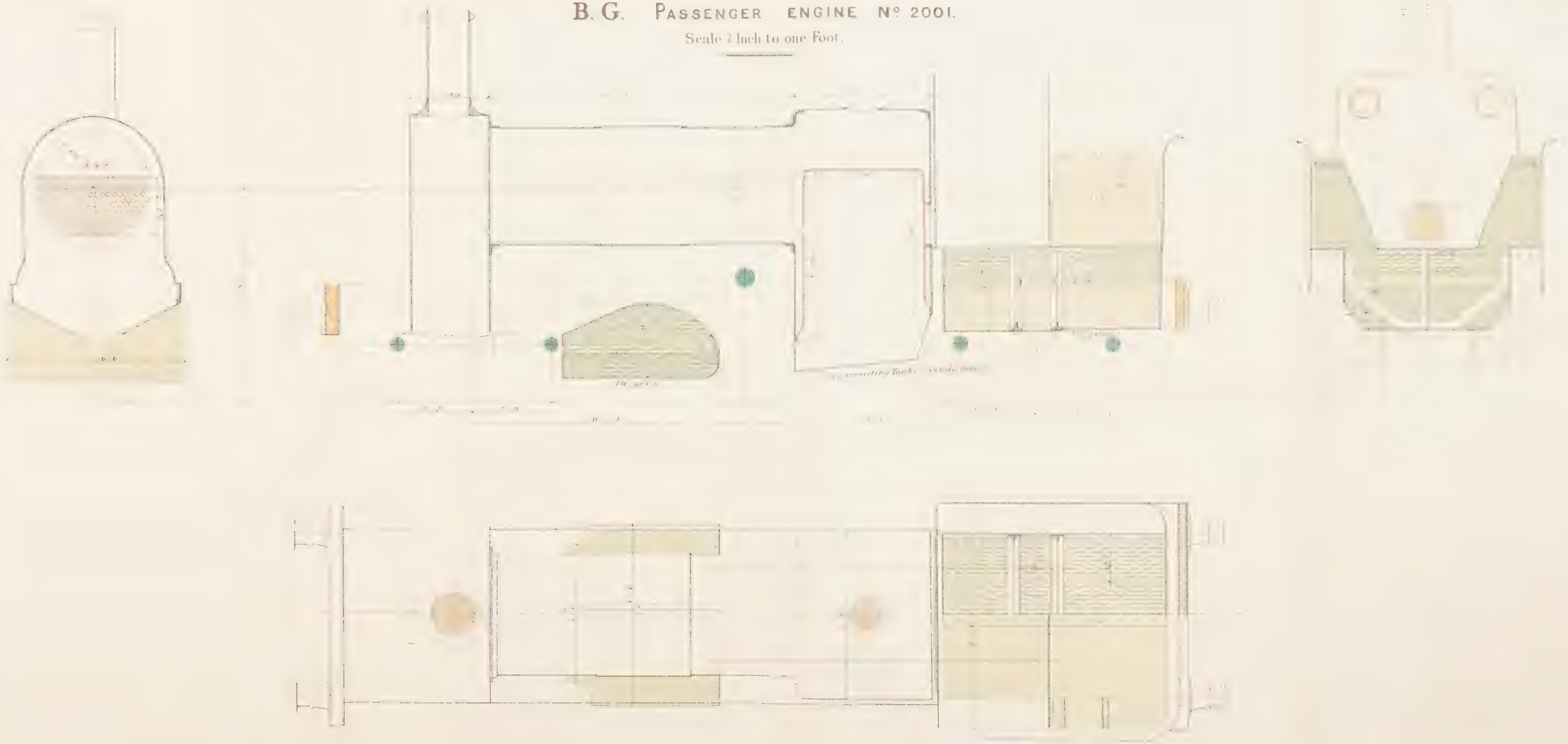
Capacity of Tanks 1430 Gallons

DIAGRAM Nº 3.

G.W.R. SWINDON.
B.G. PASSENGER ENGINE Nº 2001.

Scale ¾ Inch to one Foot.

To accompany Captain Tyler's Report dated 15 August 1876.



left the up-line, crossed to the down-line, and struck that line; and, again, when, after forcing its way across it at 62 yards, it struck the slope of the cutting beyond, and came to rest on its side at 176 yards from the first mark. The vans and carriages ran forward past the engine, for about 57 yards further.

This problem having been patiently worked out, no doubt remained that the off-leading wheel of the leading bogie-truck of the engine must have been that of which the flange first mounted the off-rail of the up-line at the point where that rail showed symptoms of previous crushing, and the next and main point to be determined was, why that flange had so mounted that rail.

This mounting of the off-rail by the flange of the off-leading-wheel was clearly the origin, or the first step in producing the accident; and, in order to determine the cause of the accident, it was necessary further to ascertain the precise conditions under which this wheel-flange mounted the rail. Such a result might have been produced, either by a defect in the engine, or by a defect in the permanent-way, or by a combination of defects in one or both of them; and a careful examination of both was required to discover any defects which might have led to it.

The speed at which the train was running may be assumed to have been a safe speed at that particular spot, provided only the permanent-way and the rolling-stock were in good condition.

The Engine.

The engine (diagrams Nos. 2 and 3) was a 10-wheeled tank-engine, of peculiar construction, with a single pair of driving-wheels, 8′ 10″ in diameter, in the middle, and a four-wheeled bogie-truck, with wheels four feet in diameter, in front of, and another similar bogie-truck behind them. The cylinders measured 18 inches in diameter, by a stroke of 24 inches. The wheel-base of each bogie-truck was 5′ 6″, whilst that between the leading bogie-truck and the crank-axle was 6′ 11″, and that between the same axle and the trailing bogie-truck was 7′ 7″; making a wheel-base of 25′ 6″, for a total length, from buffer to buffer, of 33′ 6″. The total weight of the engine, in working order, was 49 tons 14 cwt.,—made up of 15 tons 8 cwt. on the four wheels of the leading bogie-truck, 18 tons 10 cwt. on the single pair of driving-wheels, and 15 tons 16 cwt. on the four wheels of the trailing bogie-truck. The water was carried in two tanks; one under the boiler, in front of the crank-axle, with a capacity for 430 gallons; and the other on the trailing bogie-truck, having a capacity for 1,000 gallons. Having regard to the amount of fuel and water consumed on the journey, the engine would probably have been about three tons lighter on the trailing bogie-truck, and two tons lighter on the driving-wheels, so that its weight at the time of the accident would have been less than 45 tons, of which 16½ tons was on the driving-wheels, and 13 tons 16 cwt. on the four wheels of the trailing bogie-truck. The tyres of the driving-wheels, without flanges, were 6″, and the tyres of the other wheels, with flanges of the usual description, 5″ wide.

I found this engine lying on its off-side, supported on two bogie-trucks not belonging to it, in the locomotive-yard of the Bristol and Exeter section of the Great-Western Company at Bristol. Its driving-wheels were still in their places, but its other wheels were detached from it. Its funnel was gone, its smoke-box end was stove in, its bogie-frames were badly damaged, the safety-valves were broken off, the foot-plate had been broken away from the off side, and all the parts behind the fire-box had been completely torn away from it, including the tank and coal-box, which were lying on a trolly near it, very much damaged. The wheels belonging to the bogie-trucks, with their axles, were standing on the rails in the yard in front of the engine. The axle-boxes were seven of them in their places, but the off-trailing axle-box of the leading truck was not on its journal. Three axle-boxes had springs under them. The trailing-wheels of the trailing bogie-truck were very slightly marked, but there were two considerable indentations on the near-leading-wheel of this truck. All the wheels of the leading bogie-truck had evidently received rough usage after the engine left the rails.

The bogie-trucks had each four elliptical springs, and each spring had 10 plates, 4¾ inches wide, by 2 ft. 6 in. long, and ½ in. thick. Of these, I found, in examining them plate by plate, that—

- The near-trailing-spring of the trailing-bogie-truck was sound;
- The near-leading-spring of the trailing-bogie-truck was sound;
- The off-trailing-spring of the trailing-bogie-truck was sound;
- The off-leading-spring of the trailing-bogie-truck was sound;
- The near-trailing-spring of the leading-bogie-truck had one plate broken, and a small portion of it showed a new fracture;
- The near-leading-spring of the leading-bogie-truck had one plate cracked, showing a slight flaw, and one half of another plate was missing, and the other half showed an old fracture;
- The off-trailing-spring of the leading-bogie-truck was sound; and
- The off-leading-spring of the leading-bogie-truck was sound.
- The near-driving-spring, composed of 14 plates, 3 ft. long by 4 in. by ½ in. was sound; and
- The off-driving-spring was sound.
- The brasses on the "big-end" of the near-side connecting-rod had been partly melted from being heated during running.

Suspicion was thrown upon the engine in consequence of the evidence of a station-master, a foreman-platelayer, and four men in his gang, who had all seen the fireman, supported by the engine-driver with both hands, leaning over, in an unusual position, as the train passed Dumball, 27 miles from the scene of the accident, in order, apparently, to enable the fireman to examine something in the machinery behind the driving-wheel. The only explanation of this circumstance that I have discovered was that the big-end of the connecting-rod had been running hot, which was known to be the case before the accident, which was shown by examination to be the case after the accident, and which would have had no effect in producing the accident.

This engine was built by the Bristol and Exeter Company for running fast passenger-trains. It is in some respects well designed for safe and steady running, and it would be very unlikely to leave the rails on a good permanent-way maintained in high condition. The weight on the driving-wheels is excessive, being greater than the permanent-way or works were designed to support; and the absence of flanges on the driving-wheels was a serious disadvantage when once the wheels of the leading bogie-truck left the rails. It may fairly be considered, and even taken for granted, that the engine would not, on the wheels of its leading bogie-truck leaving the rails, have so suddenly quitted the up-line, crossed the down-line, and turned over against the slope of the cutting, if the driving-wheels had been provided with flanges. On the other hand, it must be admitted that the lives of many passengers were probably saved by the engine running clear of the up-line and of its train. If all the carriages had been stopped behind the engine in the position in which it lay, instead of running past it, the consequences would, undoubtedly, have been of a far more serious description.

The engine was damaged in an extraordinary degree, and various parts of it were much broken up, as a result of the accident. But there did not appear to be any defect about it which would in any way account for its off-leading-wheels having mounted the off-rail in the first instance. In other words, there was no material defect in it which would have contributed to produce this accident.

The Permanent-Way.

The permanent-way at this part of the line is composed of bridge-rails, averaging 22 or 24 feet in length, and weighing about 68 lbs. to the lineal yard, fixed on longitudinal-sleepers 14 inches by 7 inches in section. The transoms are 11 feet or 12 feet apart, and there are strap-bolts for maintaining the gauge at each transom. There are 18 fastenings to a 24-ft. rail, four at each end, and the remainder placed intermediately.

The particular rail which the off-leading-wheel of the engine mounted on this occasion was 19 feet long, and was bored for 20 fastenings. There had been no fastening in one of the holes next to its leading joint, one wood-screw was loose in it, and one fang-bolt in it was also loose. It was broken at the end on the off-side, a piece of the flange $4\frac{1}{2}$ inches long by $1\frac{3}{4}$ inches wide having been missing; and there was also a defective portion in it, in consequence of the bad welding of the material, 7 feet 5 inches from the Bourton end, extending for 11 inches. It was at this defective portion that the first mark, as of the flange of a wheel mounting the rail, was visible. The opposite rail was 12 feet 11 inches long, and was to some extent injured by wear and tear on the inner edge. It contained 14 fastenings. The gauge was $\frac{1}{16}$ inch tight at the point where the wheel first mounted, and the off-rail was one inch higher than the near rail. At 8 feet 6 inches behind that point the gauge was easy, and the off-rail $1\frac{3}{4}$ inches higher than the near rail. At the next transom, 12 feet 6 inches further towards Bourton, the gauge was $\frac{1}{4}$ inch easy, and the off-rail $2\frac{3}{8}$ inches higher than the near-rail. At the next transom, 11 feet beyond, the gauge was $\frac{3}{16}$ inch easy, and the further off-rail was $2\frac{1}{2}$ inches higher than the near-rail. At the next transom, 11 feet further, the gauge was $\frac{1}{4}$ inch easy, and the off-rail was $3\frac{3}{8}$ inches higher than the near rail. At the next transom, 11 feet further, the gauge was $\frac{3}{8}$ inch easy, and the off-rail $3\frac{1}{4}$ inches higher than the near-rail. At the next transom, 11 feet further, the gauge was $\frac{1}{4}$ inch easy, and the off-rail $3\frac{1}{8}$ inches higher than the near-rail. At the next transom, 11 feet further, the gauge was $\frac{1}{4}$ inch easy, and the off-rail was $2\frac{7}{8}$ inches higher than the near-rail. At the next transom, 11 feet further, the gauge was right, and the off-rail $2\frac{1}{2}$ inches higher than the near-rail. At the next transom, 9 feet 10 inches further, gauge $\frac{1}{4}$ inch easy, off-rail $1\frac{3}{4}$ inches higher than near-rail. At the next transom, 11 feet 9 inches further, gauge $\frac{1}{2}$ inch easy, off-rail $2\frac{1}{2}$ inches higher than near rail. At the next transom, 11 feet further, gauge $\frac{1}{4}$ inch easy, off-rail barely $2\frac{3}{8}$ inches higher than near rail. At next transom, 11 feet 6 inches further, gauge $\frac{1}{16}$ easy, off-rail 3 inches higher than near-rail. At next transom, 10 feet 2 inches further, gauge barely $\frac{1}{4}$ inch easy, off-rail $3\frac{1}{8}$ inch higher than near-rail. At next transom, 11 feet 6 inches further, gauge $\frac{1}{4}$ inch easy, off-rail $3\frac{1}{8}$ inches higher than near-rail.

In a distance of 264 ft., including the spot where the accident occurred, six rail-fastenings were loose,—five on the off-side, and one on the near-side. On the near-side one new bolt had been put in; there was one wooden plug, and a good many bolts had been recently tightened up.

When the driving-wheel of an engine stood on the rail towards Bristol there was a difference between the elevation of that rail and that of the rail behind it of $\frac{3}{16}$ in.

The total movement up and down of the rail under an engine was between $\frac{1}{4}$ and $\frac{1}{2}$ inch.

It is 139 feet from the point where the engine mounted to the change of curve.

According to the evidence on the spot of Mr. Caley and others, there was the mark as of a wheel-flange on the top of the rail on the off side, commencing at the defective portion above referred to, for about 12 yards. The flange-mark then went off to the outside of the rail, and the flange appeared to have run from that point forward along the bolts and sleepers. At the end of the 12 yards there was another mark along the rail, as of the flange of another wheel. This mark was very nearly as distinct as the former, and it extended for 14 ft., when the second wheel appeared to drop outside the off-rail. About 51 ft. from the defective portion of rail, two wheels of the engine were apparently outside the off rail; at 62 ft. the two wheels apparently got towards the edge of the longitudinal-sleeper, which was damaged up to 74 ft. At 74 ft. there was a stronger mark on the longitudinal timber, as if where a driving-wheel might have dropped off the rail upon it. At 80 ft. there were three prominent marks on the top of the rail, as of flanges going over it at a sharp angle. Between $76\frac{1}{2}$ ft. and $79\frac{1}{2}$ ft. there was also a mark on the top of the rail, and at 88 ft. a mark on the outside of the longitudinal-timber where the wheels, which mounted at 81 ft., appeared to have dropped. At 110 ft. there was another mark across the rail, and at 127 ft. the commencement of another mark running obliquely down the edge of the longitudinal-sleeper; and at 150 ft. there was a mark on the longitudinal-sleeper of the down line, where the engine would first appear to have struck that line, and the rail on that sleeper was broken. At 186 ft. there were heavy marks on the inside of the off-rail of the up road. At 400 ft. the engine crossed the down line completely, and at 427 feet struck the slope of the cutting on the down side of the line. The cutting is at this point about 50 ft. deep. From the point where the engine first struck the bank to the spot where it lay was a little under 100 ft.

The leading-van, followed by the carriages, passed the engine and came to a stand 170 ft. from the engine, the last vehicle of the train being almost opposite to where the engine lay.

The engine came to rest 527 ft. from the point where the first wheel mounted.

Commencing on the near rail, opposite to the defective spot on the off rail, the first mark on the near longitudinal-sleeper was at about 39 ft., where there was a mark of a wheel dropping inside the near rail, running forward, marking the near flange of that rail, and damaging the edge of the sleeper. This mark was further traceable across a transom at 45 ft., and a second transom at 56 ft. At 62 ft. a second wheel appeared to have dropped off inside the near rail, and its progress was clearly traceable forward over a transom at 67 ft., and along the near edge of the longitudinal up to 71 ft.

The transoms further forward having been renewed no further marks were visible on them.

Conclusions.

Having regard to these conditions of the engine and the permanent-way, and returning to the question which, in order to ascertain the cause of this accident, it is necessary to solve, namely, why did the flange of the off-leading-wheel of the leading-bogie-truck of the engine mount the off-rail, the following are the results of the investigation.

The engine was one which would not thus have left the rails on so easy a curve unless there had been some considerable defect either in itself or in the permanent way; and it would have been the less likely to do so at a time when, so much of the water of its tanks having been consumed, there was a preponderance of weight on its leading over its trailing bogie-truck. There was no defect in the engine which would have caused it thus to leave the rails. The absence of flanges on its driving-wheels no doubt allowed it to leave the rails with those wheels the more quickly after it had lost its only guiding power in the flanges of the wheels of the leading-bogie-trucks, but had no effect in producing the accident.

The permanent-way at the site of the accident was not in good condition. The off-rail rested loosely on the longitudinal-sleeper, and the sleeper loosely on the ballast. The line was not in good level. The gauge was slightly tight in consequence of the damaged

condition of the rails on both sides. The first wheel mounted at a defective place in the off-rail,—under these circumstances, only too easily, as evidenced by the comparatively slight mark it made on the rail; and it did so, apparently, from no other cause than the uneven condition of the permanent way, above described, combined with the speed of the train. The bruised portion of rail on which, undoubtedly, the first wheel first mounted would naturally be viewed with suspicion. At a point where the gauge was tight, and on the outside of a curve, in the case of an engine travelling at high speed, any inward bulge would form a natural impediment to guide the flange of the leading-wheel on to the top of the rail. It does not appear, however, that any special mark was observed, after the accident, on the inside of the rail, to indicate that the wheel-flange was thus forced up on the rail; and when I visited the spot, and specially examined the rail to ascertain whether such was the case, the inner edge of the rail was squeezed down into a smooth condition longitudinally. Trains had then been running, however, in both directions, during the previous 24 hours, and the inner edge of the rail might have been more smooth and regular than at the time of the accident.

The present being the third accident within a comparatively short period to this fast train, and the speed having been in each case not much if at all less than 60 miles an hour, it may be useful briefly to point out the causes, and to consider how these different accidents have occurred.

In the first of the three, within 3¼ miles of Paddington, on the 4th April, the engine remained on the rails, but the passenger-carriages left the rails, in consequence of the want of sufficient fastenings, on a new portion of line, temporarily laid in, between the rails and the sleepers.

In the second of the three, between Collumpton and Hele, near Exeter, one carriage only of the train left the rails, in consequence of the spreading of the rails and sleepers, which were insufficiently tied together, and of their being unable, with the ballast thrown out, to resist the strains of the engine passing over them at high speed.

In the present instance, the engine itself was the first to leave the rails, and the permanent-way was undisturbed up to the point at which its leading-wheel mounted, comparatively lightly, to the top of the outside rail of an easy curve. This accident has occurred as the result of irregularity in the level of the rails on the curve.

But these three accidents have all been due to defects in the permanent-way, and the two last to defects on what is now the Bristol and Exeter section of the Great-Western Railway.

In order that a reasonable degree of safety may be obtained for trains running at 55 or 60 miles an hour, the permanent-way should be maintained in good line and level, the materials of which it is composed should be in good condition, the fastenings should be secure, the ballasting should be properly attended to, and the gauge should be carefully preserved. These conditions had not been complied with between Hele and Collumpton, or at Long Ashton. Immunity from accident depends on the preservation of a large margin beyond what is barely necessary to prevent actual or obvious risk. That margin had not been maintained. It is of the highest importance on a main line of railway, on which trains at the highest speed continually run, not to allow the permanent-way, which is the foundation of all safety, to become deteriorated, so as to cause accidents of this description, and constant risk to the passengers using the railway.

I have, &c.,

The Secretary, H. W. Tyler.
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 21st October.

GREAT WESTERN RAILWAY.

Sir, *Durston, 8th September* 1876.

In compliance with the instructions contained in the Order of the 5th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 4th inst., near the Durston station on the Bristol-and-Exeter section of the Great-Western Railway.

In this case the 11.40 a.m. narrow-gauge passenger-train, from Yeovil for Durston and Taunton, passed in the wrong direction through a pair of facing-points about 300 yards on the west of the Durston junction station, and, running into a siding, came into collision with some waggons which were standing in that siding. The engine was very little damaged. Neither the engine nor any carriage of the train left the rails. Five waggons were damaged to the estimated extent of 15*l.*

The points in question are about 280 yards from the signal-cabin, which is itself about 100 yards from the station. The points are worked by means of a capstan opposite to them, and are bolt-locked from the signal-cabin.

In the signal-cabin there are 25 levers for working the neighbouring points and signals. No. 15 lever is used for bolt-locking the points and the levers; and levers Nos. 21 and 22 for working home and distant signals respectively. Lever No. 15 is interlocked with levers Nos. 21 and 22.

Evidence.

Thomas Gair, the engine-driver of the train in question, left Yeovil about 12 o'clock, about 20 minutes late, and approached the home-signal near Durston at 12.33 or 12.44, whilst running at a speed of about six miles an hour. When so approaching, the siding-points near the home-signal were set for the siding instead of for the main line. They were completely over for the siding. He had just time to open his whistle and tell his fireman to apply his break, but he did not jump off the engine, before the collision occurred. His engine did not leave the rails, and he was not hurt. The signal was right for him to pass forward to the station. He asked the passengers if any of them were hurt, and some of them replied, "No; only a little bit of a shock."

Frank Cosling, the fireman, did not notice in approaching the points that they were in the wrong direction. His driver said "Woh!" to him just as he was on the points. He had hardly time to apply the break before the collision happened.

John May, the guard of the train, left Yeovil at 12 o'clock, 20 minutes late, and ran in due course towards Durston. In approaching the home-signal he thinks they were going from four to five miles an hour. He heard a break-whistle, and, whilst applying the break, felt the jerk. He was not knocked down, and he was not injured to speak of. The train was composed of engine and tender, three carriages, and a break-van at the tail of the train.

John Albert Widdicombe, the relief-signalman on duty at Durston cabin, left Exeter at 6 a.m., and was on duty in the cabin at 7.50 a.m. He had no occasion to move the lever by which the siding-points were

worked until about 12.20, when porter Berridge took two trucks from the station, and told him he was going down to the points to put them into the siding. He therefore pulled over No. 15 lever and No. 16 lever for working the siding catch-points. When Berridge returned he asked him whether he had replaced the points in their proper position, and Berridge said he had done so. The trucks were in the way of the target on the quadrant from which the points were worked, and he got on a chair to see what position it was in. He noticed that the target was not in the position that it ought to have been in if the points had been shut. He therefore said to Berridge, "I cannot see the target as it should be." Berridge replied, "It does not come round now; it stands skew whiff." He added, "It is all right; I have pulled them over and pinned them over." The train had then left Athelney about five minutes. He therefore pushed back levers Nos. 16 and 15, and lowered his signals for the train to come in. As the train was approaching the home-signal Berridge said to him, "Johnny, I'll go down again to make sure." He replied, "The train is under the home-signal," and, as soon as these words were out of his mouth, he saw the train turning into the siding. He found no difficulty in putting back the lever, which appeared to go back easily, and he had no idea there was anything wrong with the apparatus. He had not been on duty on previous days, and had only once worked No. 15 lever.

William Berridge is a porter at Durston station, in the service of the Great Western Company, and has been so for more than three years. On the 4th inst., between 11.40 and 12.36, he was engaged in shunting waggons at the Durston station. About 12.20 he was engaged in putting two trucks into the turn-table siding. He worked the capstan and pinned over the points to allow him to do so. He believed that he had again shut the points, having gone back on purpose to do it after putting the trucks in the siding. He jumped in between the trucks to couple them up, and to unhook the chain which had been attached to them for the horse to pull them into the siding. Then he had a truck to pull out from the new siding and to shunt across, and as he was passing the block-hut in the course of doing his work, signalman Widdicombe said to him, "Berridge, how are those points standing? because the truck is so high I can't see." He told Widdicombe he was positive they were right, for he had gone back and turned them. He added, "I believe I put the pin in." He cannot explain how it was that the points were wrong afterwards, and the train ran the wrong way through them.

John Dart is signal-inspector on the Great Western Railway, and formerly employed by Messrs. Saxby and Farmer. He received a telegram the same evening the accident occurred, directing him to proceed to Durston and examine the apparatus. He reached Durston the following morning, having previously sent a labourer, Thomas Handle; and he found that Handle had already taken out the rocking-shaft when he arrived. The rocking-shaft was not broken in two, but was twisted round at the journal. He had examined the apparatus on the previous Thursday, and had then found it working properly. The rocking-shaft of No. 10 lever, working the cross-over-road points for the mixed gauge, and therefore having six tongues to push over, broke several times, and failed on two occasions within three days. Since that time a steel rocking-shaft has been put it, and it has not failed.

William Greenslade has been working as signalman at Durston for six or seven years, and in that cabin since it was opened about three years ago. He came on duty at 7 o'clock on Tuesday the 5th inst., and about 8.15, Handle, a labourer, came to the cabin and asked him to work the locking-bolt lever that he might go to the points and see what was the matter. In working the lever he found that it moved much too easily, and he therefore concluded that there was something broken in the apparatus, and told Handle that such must be the case. Handle took the cap off and found the rocking-shaft twisted.

Thomas Handle, the labourer referred to, went to the points and told the signalman to work them, and on finding that the bolt did not move, he came back to the cabin and examined the rocking-shaft. He took off the cap and found the shaft twisted in two or three places. He went to the shaft of his own motion.

Mr. Waller, assistant and representative of Messrs. Saxby and Farmer, has not seen the cabin since his firm were last engaged in adding to the apparatus about two years ago. He considers that the rocking-shafts are suitable for such cabins when they are not overloaded, but that the rocking-shafts in this yard, having more to do in consequence of the mixed gauge, ought to be replaced either by cranks, or by stronger or steel shafts. He was aware of the rocking-shaft of No. 10 lever giving way after it had been working ten months, and that it was repaired by the Company's smith at Bristol at the contractor's expense. He had not heard of its breaking afterwards.

Conclusion.

This accident has been occasioned by the mistake of the porter Berridge, who evidently forgot to replace the points in their proper position after having shunted two trucks into the siding, and by the failure of a rocking-shaft in the Durston signal-cabin, which neutralized the means of safety employed to provide against such a contingency.

The apparatus was intended specially to provide against the possibility of danger from such a mistake being made. It failed to do so on this occasion because the rocking-shaft was not strong enough for the work which it was required to perform.

The points in question are only used in the ordinary way once a day, and the rocking-shaft could not, therefore, have had much work to do. But with a strong lever on one end of it, and nearly 300 yards of rods connected with two locking-bolts and one locking-bar at the other end of it, it gave way under the strain.

In order to prevent such an accident in future, it is desirable either to strengthen the rocking-shaft or to adopt cranks, which are less liable to fail.

It is necessary, also, that weeds and dirt should be removed, so that the rods may be made to work more easily, and without being in any way obstructed between the cabin and the points.

I have, &c.,
H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on 28th September.

GREAT WESTERN RAILWAY.

Weston-super-Mare,
12th September 1876.

Sir,

In compliance with the instructions contained in the Order of yesterday, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 4th instant to a passenger-train at the Weston-super-Mare station on the Great-Western Railway.

In this case, as the branch train running in con-

nection with the 3.15 p.m. passenger-train from Bristol was entering the Weston-super-Mare station, the engint came into collision with the stationary buffer at he end of the station.

A break-rod in the leading break-carriage was broken, and two passengers are said to have received contusions.

The passenger platform at this station is 478 feet in length, and the line is level.

The trains are in the habit of running in without stopping from the junction.

The train in question consisted of a tank-engine and six passenger carriages, of which two were break-carriages. It left Weston junction at 4.39 p.m. and approached the Weston-super-Mare station, 1½ miles from that junction, at 4.44, being about 23 minutes late.

The engine-driver, *John Byrant*, has been driving into the Weston-super-Mare station every other evening for about three weeks, but he had previously been running in as fireman or engine-driver at different times for some years. He has been an engine-driver since last November. On the day in question he left the Weston junction at 4.39 p.m. and ran towards towards the Weston-super-Mare station in due course. There was a misty rain falling, and the rails were very slippery. He shut off steam rather earlier than usual, between the gas-house and the block-hut, 300 or 400 yards from the station. In coming into the station he thought the train was going rather fast, and he told his mate to apply the break. He did not whistle for the guard's breaks because he thought he would be able to stop. On reaching the station-platform he told his mate to take off the break, and he reversed his engine and applied steam. The train struck the buffer-stop at very slow speed. He remained on his engine. His engine was running bunker first, and he has no sand boxes at that end of it, otherwise he would have been able to pull up short of the buffer-stops.

The fireman, *Alfred Evans*, states that the driver's evidence is as nearly right as it could be. He applied the break when he was told to do so, and took it off when he was told to take it off, and he remained on the engine when it struck the buffer-stop.

The head-guard, *William Hill*, was riding in the break-carriage second from the engine. He considers the speed on approaching the station to have been a little quicker than usual. He applied his break as he was passing the end of the platform and had it on tight, with the chain on the handle, before the collision occurred. He felt only a slight shock. It did not even throw any parcels off the seat.

There were two porters riding in the break-carriage, fourth from the engine. One of these porters, *William Lovering*, thought the train was coming in a little faster than usual, and he told the other, *John Ward*, to apply the break at the second lamp after passing the end of the platform. Ward had applied it before the collision occurred, and it was tight on. They did not hear any whistle from the engine.

This collision was the result of a want of caution on the part of the engine-driver in approaching the station at rather too high a speed, on a day when the rails were slippery from a misty rain, and he was not supplied with sand-boxes on his engine to enable him under such circumstances easily to bring his train to a stand in the station.

A tank-engine of this description being run on this branch as frequently in one direction as in the other ought of course to be supplied with sand-boxes at the bunker-end as well as at the smoke-box end.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department*),
Board of Trade.

Printed copies of the above report were sent to the Company on the 6th October.

GREAT WESTERN RAILWAY.

Sir, *Challow, 6th October* 1876.

In compliance with the instructions contained in the Order of the 8th ultimo., I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 4th ultimo, at the Challow station, on the Great-Western Railway.

In this case, whilst the 10.35 a.m. passenger-train from Plymouth for London was passing through the Challow station, at a speed of about 50 miles an hour, the engine came into collision with a stick of timber about 30 feet long, and varying from 10 inches to 2 feet in diameter, which was supported from a portable crane.

The smoke-box at the leading end of the engine was smashed, the steam-pipe in it was damaged, the funnel was carried away, and the front tube-plate was stove in. A post-office-van, the second vehicle behind the tender, had an axle-box broken, and the foot-step of the carriage next behind it was damaged. The engine remained, however, on the rails, and the train ran about a mile and a half before it could be brought to a stand. In consequence of the destruction of the smoke-box there was a strong draught through the tubes, by which the fire-door was blown open, and this prevented the driver and the fireman from getting to the break-handle, so that they were mainly dependent upon the breaks of the guards for stopping the train.

No passengers have complained of injury, nor were any of the company's servants injured.

The piece of timber so struck by the engine was broken into two pieces, one of which fell upon the line parallel to the rails, and the other across into a carriage-dock on the north of the line.

Description.

The Challow station is 63½ miles from London, and about 14 miles on the east of Swindon. It is a station at which a considerable quantity of timber is at times loaded. There is a goods-wharf on the north of the main-lines, with two sidings between it and the up main-line.

It is the practice, in loading timber at this station, to use a portable-crane, upon a railway-truck which stands in the siding next to the loading-bank, and to employ this crane for picking up the timber off the loading-bank, and transferring it into trucks standing in the siding next to the up-main-line.

The rules of the company provide that:—

"No shifting of vehicles, crossing trams, or work of "any description which will cause an obstruction on "the main line, may be done without, in each "case, the sanction of the station-master, or of the "signalman in charge, being first obtained. Such "work may not be commenced until the danger "signals are shown, nor unless it can be completed, "and the line made clear five minutes before a "coming train, that is not timed to stop at the "station, will arrive, except in a case of absolute "necessity, when every precaution must be taken to "ensure safety. The danger-signals must remain

" shown the whole time that such work is in progress, " and if both lines are used the danger-signals must " be shown in each direction."

The train in question consisted of an engine and tender, eight vehicles, and one break-van; there was also a post-office-van, next behind the leading break-van.

Evidence.

The engine-driver, *Nicholas Gray*, states that he has been 22 years driving in the service of the Great-Western Company. On the day in question he left Bristol at 3.29 p.m., 29 minutes late. He stopped at Bath and Swindon only; left Swindon 43 minutes late, and reached the Challow station at 5.10 p.m., about 10 minutes late. In passing through that station he suddenly felt a shock on his engine, and saw the flames coming out of the fire-door. He shut off the steam, and got back on the tender to avoid the flames; and he remained in this position until his engine with its train came to a stand. He then examined his engine, and found part of the smoke-box gone, and other damage; and he remained until another engine came to fetch his train. He saw that the signals were "all right" for him to run through the Challow station, and just before he felt the shock the fireman put his hand on his arm, and said "Hold on, mate;" he then shut off steam, but he cannot say whether he did so before he struck the timber or not.

Frank Woodman, fireman, confirms the statement of the engine-driver in all respects. In approaching the goods-shed on the east of Challow station, he saw the baulk of timber was across the main line in front of the train. He therefore said to the engine-driver, "Hold on, mate," and applied his break. He was busy applying his break, and did not see the timber strike the engine; he felt a little shock when it did so. He does not think there would have been sufficient shock to throw him back, even if he had not had hold of the break-handle. He had not time to get the break fully on before the engine struck the baulk of timber, and he was then driven away from the break-handle by the flames which came out of the fire-door.

The signalman in the Challow cabin, *Richard Giles*, has done duty there for a little over four years. He came on duty at 1 p.m. on the 4th September. Mr. Noble and his gang were there, working at the crane, loading timber from the wharf. The crane was in the siding second from the main line, nearly opposite his cabin, about 50 feet from it; and the men at the crane were working more or less from 1 o'clock p.m. up till 5 o'clock, or a little later. He had no occasion to stop them in their work between one and five o'clock, because there were no trains passing that would be likely to foul the timber in the course of loading, although he did give them warning. The fast train from Plymouth and Bristol, leaving the former place at 10.35 a.m., was 40 minutes late on that day, and was signalled to him at 5.7. As soon as he received notice from Uffington of the approach of this train, he went to the window and called out to the timber-loaders, "The Bristol fast is signalled," as plainly as he could speak. When he shouted to the timber-loaders they were quite still. There was a tree suspended on the crane lengthways with the yard, and the three timber-loaders all stood still and looked towards the cabin. He did not leave the window of the cabin until he observed that they noticed him by looking towards him. They did not show in any way that they heard what was said, except by looking towards the window. He booked his train, and saw it pass his distant-signal, and, looking round again towards the timber-loaders, he saw they were doing contrary to what he told them,—they were pushing the tree in the direction of the main line; he called out in his loudest voice to tell them to stop, and said that the fast train would be into them, and turned his signal to danger, but it was too late. He could not say whether the train had passed the home-signal or not when he did so. The "Flying Dutchman" passed at 1.48. The timber-loaders were then sitting at dinner, and he did not therefore tell them. When the 1.35 from Swindon passed at 2.18 there was no timber on the crane; but he shouted out to them that the train was signalled from Uffington, and Noble gave him his arm in reply. A stopping train arrived at 2.36. He shouted to the timber-loaders when that train was signalled, and Noble held his arm up. At 3.18 another train passed, but the men had then gone away from loading, and there was no occasion to warn them, so he did not do so. After that they lifted two timbers, and it was the second of these timbers that the train came in contact with. At 3.50 a goods train passed, but there was no tree on the crane, and he took no notice. At 4.26 a train passed, and it was signalled from Uffington at 4.24, and he gave them warning, and one of them called out in reply, "All right." No other train passed before the accident occurred.

Edwin Noble, contractor for the loading of timber, goes from station to station as is required with a travelling-crane to do this particular work. He is always at work at one station or another, except when he is unable to get trucks. He arrived at Challow station on the morning of the accident, and commenced working about 10 a.m. He believes he was told several times during the morning of the approach of trains; but between two and five o'clock, and up to the time of the accident, he had no warning. He began about 4.55 to lift a tree about 32 feet long, and 68 inches round in the centre of the tree, and containing about 68 feet of timber. It was only after several attempts that he got it balanced on the crane. As soon as it was up to the proper height he began to turn it round, to put it on the trucks, which were fully loaded, except that he was going to put this tree and another upon them. The first intimation he received from the signalman was while he was turning the timber round, when he shouted out that the train was coming, and at the same time he could see the steam of the engine at a little distance from him. He did all he could to get the crane round, but he was unable to do so before the tree was struck. He was able to jump off and get out of the way before the collision. He has heard the statement of the signalman, but he does not believe it. He is certain that the signalman did not give him any notice until the train was just upon them. His practice always is to go on working until he hears that the train is signalled. If he had known that the train had left Uffington he would at once have left working until the train had passed. He denies having held up his arm in reply to Giles, the signalman, or having heard him give any notice, as he asserts, at 2.18. He also denies that anything of the sort happened at 2.39. It was his first day of work at Challow.

Thomas Grant has been working for about three months with Mr. Noble, loading timber at different stations. He thinks it was after 9 a.m. when they began work at Challow. He does not remember what time he went to dinner on that day. He does not remember whether the signalman gave them any notice of any trains in the morning. He cannot remember receiving any notice at all of the train in question until it was too late, and the accident occurred. He was helping to push the timber round, when he heard the signalman shout out that the express was coming; and then he heard and saw the train coming, and before he could get the timber out of the way the accident happened. He remained standing on the crane, and had not time to get out of the way before the train struck the timber.

George Green, a porter at Challow station, in the service of the Great-Western Company, has been so for two years last May. Between four and five o'clock on the day of the accident he was waiting at the turn-

table to turn an empty truck. He asked the signalman to allow him to do it, but he said he could not do so, because the train was due. He stayed at the turn-table about six or seven yards from the timber-crane for seven or eight minutes before the accident. He did not hear the signalman say anything from the window of his cabin to the timber-loaders. He cannot say whether he would have heard it or not if the signalman had said anything. He did not see the engine strike the timber; he was then a few steps nearer the station. He saw the train coming before he heard the signalman shout, and saw the timber in the way of the train. He was too much frightened to say anything to anybody, or to run away himself. He only saw the train a few seconds before it struck the timber.

Mr. Morley, the station-master at Challow, states that he has frequently cautioned the signalmen as to timber-loading, and verbally instructed them to be particularly careful in informing the timber-loaders as to when trains might be expected, and to ascertain how the trains were running. He had seen several sticks loaded on the morning in question, and had spoken to the signalman Giles, and heard him give orders to the timber-loaders. He is not sure whether he warned the signalman on that particular morning. The signalman Giles has, since the accident, been dismissed from the Company's service for want of care in regard to the timber loading. The quantity of timber loaded at Challow station during the past 12 months has been in three consignments :—

The first in May of 86 tons.
The second in September of 36 tons.
The third in October of 23 tons.

There was no timber loaded at this station between July 1875 and May 1876.

Conclusion.

The evidence in this case is somewhat conflicting, as between the signalman in the cabin and the contractor for loading the timber. The signalman positively asserts, on the one hand, that he went to the window of his cabin and called loudly to the timber-contractor to give him notice of the approach of the train. The timber-contractor asserts positively, on the other hand, that he received no such notice. Having regard to the way in which this evidence was given, and to the substance of it, I am inclined to the opinion that the signalman did not give any warning to the timber-contractor until the train was close upon the timber, and until it was too late to get it out of the way of the train.

In such a case, when timber is swung across the main-line, it would be only right that the timber-loader should distinctly obtain permission from the signalman before he obstructs the main-line. At the same time, it must be observed that he is not a servant of the Company, and is doing work in which he ought to be checked by the signalman if it is actually to endanger the safety of the trains.

Such an accident could not, of course, occur if the timber-crane were sufficiently far from the main-line; and it is very desirable that cranes used for loading timber upon trucks should, as far as possible, be so placed. It appears that some alterations are contemplated at this station. The turn-table, at present too near the main-line, but locked from the signal-cabin, so that it cannot be used while the signals are lowered for the passage of trains, is intended to be removed; and access in a different manner is to be provided to the sidings. It will not be difficult, in carrying out these alterations, to make arrangements by which the travelling-crane may be kept a greater distance from the main-line, and the great risk of large masses of timber being placed in the way of trains passing the station at high speed may thus be entirely avoided.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th October.

GREAT WESTERN RAILWAY.

Sir, *Radstock, 2nd October* 1876.

In compliance with the instructions contained in the Order of the 12th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 7th September, near Radstock, on the North-Somerset Branch of the Great-Western Railway.

In this case, the 9.15 a.m. passenger-train from Bristol for Radstock and Frome was passing round a curve of 2,000 feet radius, and up a rising gradient of 1 in 70, when the leading-wheels of the engine suddenly left the rails on the outside of the curve. The trailing-wheels shortly afterwards left the rails on the inside of the curve, and the train was brought to a stand in about 150 yards, with the leading and trailing-wheels off the rails, but the driving-wheels still on the rails.

No vehicle in the train left the rails, and no passengers have complained of injury. The fireman was thrown off the engine, but was not injured. Two rails were bent in the permanent-way, which was not as much damaged as might have been expected.

The permanent-way on this part of the line was laid, when the second line was added, about two years ago. It consists of double-headed steel rails, weighing 80 lbs. to the lineal yard, fished at the joints. The chairs weigh about 32 lbs. each, and they are screwed to the sleepers by fang-bolts, two in each chair. The sleepers are laid transversely, and measure 9 feet long, by 10 inches by 5 inches in section.

In testing the gauge this morning I found it about $\frac{1}{4}$ inch easy round the curve, which is what it ought to be. In trying the levels I found that the outer rail had a super-elevation varying from $2\frac{3}{8}$ inches to 3 inches, with a versed sine of $2\frac{7}{8}$ inches.

The engine is a six-wheel-coupled saddle-backed tank-engine, with wheels five feet in diameter, of ordinary dimensions. It was not in any way damaged; it was at once set to work again, as soon as it was got on the rails, and it has been working ever since the accident. It appears to be, in all respects, in good order.

Evidence.

Henry Harwood, the engine-driver, has been driving for three years in the service of the Great-Western Railway Company. On the 7th September he left Radstock at 10.12 a.m., five minutes late, with a passenger train for Frome. After travelling about a mile and a half, and whilst proceeding at a speed of about 15 miles an hour, he found the leading end of his engine suddenly drop off the rails, throwing the trailing end off as nearly as could be at the same time. He called to his mate to apply the engine-break, but his mate was either thrown off or fell off the engine. He did not see him fall off, but he found, after going about 10 yards, that his mate had disappeared from the engine. He therefore applied the break himself, after reversing the engine, and brought the train to a stand in about 150 yards. He immediately got off his

engine, and went back to ascertain the cause of the accident. He and the guard traced the course of the accident back to the point at which the engine first left the rails. He found some rails twisted, and several chairs broken. He found a mark on the outside rail of the curve where, apparently, a wheel had travelled along the rail for five or six feet, at the end of which distance it had dropped off to the outside. He did not try the gauge or the level on the rails. The ballast was disturbed, and the men had been working at the inside rail. As he approached the spot with his train he saw the platelayers standing off the line to allow his train to pass, but he did not see what they were doing before they left the line, because the view was obstructed by a coal-train passing in the opposite direction. He asked the ganger what was the cause of the engine leaving the rails, and the ganger pointed to the chairs, saying, "There are two or three broken there." He did not notice anything else. His engine was in good order in all respects. He had been running with it ever since the latter part of last March, and nothing had been done to it since that time, and he had no fault to find with it, nor had he made any complaint about it. He has been running with it ever since the accident, and it is still in good order. He found the chairs broken after the engine left the rails. His fireman was not injured; but ran after the engine, and caught it again before it came to a stand. The fireman has since left the company's service, and joined the South-Western Company. He found, when he applied the break, that it did not act, in consequence of the four wheels being off the rails. He is quite sure the ballast was thrown out at the point where the engine first left the rails, but he cannot say how far towards Radstock it was thrown out. He thinks most of the platelayers were on the fireman's side. He passed them before the engine left the rails, but he cannot say how far before. He is quite sure he saw them standing out of the way at some point before the engine left the rails. He had cleared the break-van of a coal-train passing in the opposite direction about 15 yards before his engine left the rails. He saw Martin (the ganger) and his men at work repairing the line, and putting it back before Hinks and Robson reached the spot. He did not see them doing anything at the exact spot where the engine left the rails. They were working on the Frome side of where the engine got off the road, where the permanent-way had been displaced by the engine after it left the rails. He states that the guard's evidence is quite wrong; the ballast was thrown out from under the low rail of the curve.

Gavin Anderson, the guard of the train, left Radstock at 10.12 a.m., five minutes late, on the day in question. The train consisted of a tank-engine, four passenger-carriages, and a break-van at the tail of the train, in which he rode. Between the mile-posts 121¾ and 121½ he was travelling at a speed of 15 or 16 miles an hour when he found that the engine was stopping, and then, after travelling about 100 yards, he found the train coming to a stand. He got out of his van, ran to the engine, and asked what was the matter. He found that the leading and trailing wheels of the engine were off the rails. He sent the fireman forward with the train-staff to Frome that the break-down gang might come to assist, and went back himself towards Radstock to protect the rear of the train. He went back with the engine-driver to try to trace where the engine first left the rails, and the packers were at work at the spot where the engine first left the rails. There were a ganger and several other men there; it was Martin and his gang; they seemed as if they were lifting the road. As far as he could see, they were lifting the right-hand rail, standing with his back to Radstock and his face to Frome. He did not notice particularly whether they had a bar under the rail or the sleeper, but he saw a bar there. The road was opened out at the spot where the engine left the rails for about 12 yards back towards Radstock. The men were using the shovels, as if packing the sleepers at the spot where the engine left the rails, when he got back with the engine-driver to where the engine left the rails; they seemed to be at work at the right-hand rail from Radstock.

Joseph Hinks, the inspector of permanent-way for 30 miles between Radstock and Frome, and Witham and Wells, has acted in that capacity for about six years. At 10.45 he first heard of the accident at Frome, and he went with Mr. Robson, the locomotive inspector, on an engine to the scene of it. He found the engine still off the rails, and the rails twisted and bulged very much, and several chairs broken. On examining the point at which the engine first left the rails, he found the road right to gauge, and a cant of 2½ inches of the outer above the lower rail. Judging from the appearance of the road at the point where the engine first left the rails, he should say that it had not been touched for a day or two, for 10 feet forward from where the engine left the rails; and in the direction of Radstock for half a mile the road had been undisturbed, he should say, for a day or two. He recollects particularly looking at a spot where the off wheel had mounted and run along the off rail for about 10 feet and then dropped off outside, and he does not believe, so far as he can recollect, that, up to that point where the engine dropped off, the road had been in any way disturbed for a day or two. He had walked over the road two or three days before, and found there was four inches of cant on that curve, and considered it too much, and ordered the ganger to pick up the inside rail of the curve one inch. He cannot be sure for the 10 feet, but he took particular notice as to where the engine mounted, and he is certain the road had not been disturbed at that point. From that point forward towards Frome the road had been lifted, and the ballast disturbed, but the road was so twisted and thrown about that he could hardly tell what had been done. He is unable to assign any cause for the accident. He measured the cant back towards Radstock for about 50 feet, and found it varied about one inch or one inch and a quarter. It varied from two inches to three inches and 3½ inches, and so on. He found it as much as 3¾ inches, and in one place as low as 1¾ inches. The gauge was easy all round the curve. He told the ganger to remedy these inequalities of cant, and to adjust it from 2½ to 3 inches all round the curve. After a train has been over, the ground gradually gives way, and the line wants continual packing up. He does not mean at that spot particularly, but everywhere. After hearing Robson's evidence, he says that he saw Viner and his men, but he could not say where they were. He does not say they were not on the spot where the engine first got off the rails. Now he is reminded it was Viner who brought him the gauge to gauge the road. He cannot say whether Viner was or was not at the identical spot where the engine got off. Having heard the evidence of the engine-driver, Mr. Robson, and the platelayers, he now believes that the ballast was thrown out at the low rail.

George Martin, the ganger in the service of the Great Western Company, has been so for 22 years on the same part of the line. His length extends for two miles out of the Radstock yard, and half a mile beyond where the accident happened. He had received no instructions, and had not been told to do anything at that part of the line where the accident happened. There was a little too much cant, which he found out himself, and he went to pull it out. He tried it all through one or two days before, and found there was too much cant. The most he found was four inches. One place was down a little more than another, and it averaged 3¾ inches. He was going to put it to 2½ inches all round. Mr. Hinks gave him the orders two or three, or three or four, days before, not only with regard to that place, but also in regard to other places, but he did not give

any orders particularly about that place. It was only a general instruction to go all through, and where he found the cant was too much, to take it out. He began on that part of the line about three o'clock on the previous day. He opened out the ballast and tightened the bolts, and he began lifting about 6.30 or 7.30 on the morning of the accident. He found the worst place, where the lower rail of the curve was lowest, just on the Frome side of a bridge over the railway. It might be six rail lengths from that bridge to where the engine first left the rails. He began at six or seven rail lengths from the point where the engine first left the rails to lift on that morning at six or seven o'clock. He first lifted and packed four rails; that took him to about eight o'clock. He then opened out some more ballast and tidied up what he had done, and did not lift any more until after the accident happened. He opened three or four or five rail lengths from where the engine first left the rails towards Radstock. He is quite sure that he had opened out that part of the road for lifting, but had not lifted, where the engine first got off the rails. He corrects this statement by saying that he had lifted beyond the point where the engine left the rails, and for three or four or five rail lengths on the Radstock side of where the engine first left the rails. It was lifted and packed, but the ballast was not tidied in. He was three or four or five rail lengths on the Radstock side of where the engine got off, when the train, of which the engine left the rails, passed him. He and his men were levelling ballast as the train approached, and he stood in the six-foot space to allow it to pass him. He heard something rattle after the engine went by. He went to look at the spot to see if he could see anything on the rail, and the engine-driver came back, and they looked at it together. He could not see anything on the rail, or find out any cause why the engine left the rails. He did not meddle with the road there before the inspector, Hinks, came to the spot, an hour or more after the accident, nor did he make any alteration in that part of the line for several days until some engineer had been to take the measurements. Mr. Hinks told him not to meddle with it.

Joseph Mitchell is one of Martin's gang, and has been working with him for two or three years. He began at the bridge over the line at 8 o'clock or 8.30 on that morning, and pulled the slack out of the inside rail of the curve near the bridge. He began at 6 o'clock opening out at the same spot, and was working about that spot from 6 o'clock till the accident occurred. It might be 10 or 11 lengths that he got back with the lifting before the accident occurred. They lifted the inside rail about one inch or one inch and a half. It was a bad place, and he was bringing it up to 2½ inches cant. In running out the slack he had got about two rail lengths towards Radstock, where the engine first mounted the rails, and had not opened out more than two rail lengths beyond that point. He had not lifted anything, and it was all finished packing at that point where the engine mounted before the engine came up.

John Robson, inspector in the locomotive department of the Great Western Railway, has been so for nearly six years. He reached the scene of the accident about two hours after it happened. Inspector Hinks accompanied him. They went back to the spot where the engine first mounted the rail. He gauged the road, and found it correct. He tried the cant, and found it 2½ inches. He did not try the cant anywhere else. The road was opened out at that spot, he is quite certain, and he thinks for 10 or 12 yards towards Radstock. He noticed the mark about two feet long on the outside rail of the curve, where the engine had run along and slipped off it, pitching on the outside of a chair and breaking it. He thought that there could not have been enough cant on the curve at the time when the engine got off. He made no other observation on the spot. He went to assist in getting the engine on the road again. When he first reached the spot he found George Viner at work at the spot where the engine first left the rails. They had got the ballast cleared out from the sleepers, and he supposed from what he saw that they had been lifting the road, from the manner in which the ballast was pulled out as if for lifting. They were then at work at the road at that particular spot. Hinks went with him to the spot, and must have seen the men working at the spot. Viner stood there with his tools in his hands, and fetched the gauge for Mr. Hinks when he asked him to fetch it. Someone had evidently disturbed the road, and they were on the spot with their tools. He did not notice them working there afterwards. Three men with Viner were at the spot with their tools. Directly he tried the road he went back to the engine. He thinks 2½ inches was sufficient cant, but that there was probably not sufficient where the engine got off. He has ridden round the same curve with the same engine since, and she now rides round very nicely, and nothing whatever has been done to the engine in the meantime.

Samuel Brown is a packer in Martin's gang, and has been so for rather more than two years. The engine had not passed him above a yard when it left the rails. He was standing clear of the down road and on the down side. He was engaged packing on the up road as the engine of the passenger train approached. He was packing under the low rail of the curve. He was packing on the Frome side of where the engine got off, and about a yard or two from the spot where the engine did get off. After the coal-train passed, and when the passenger-train came up, he was packing with the beater. He had been lifting half an hour before the coal-engine came up. They had only lifted the low rail, not the high rail. They had been lifting about two or three yards on the Frome side of where the engine got off, and no further towards Radstock, just before the coal-train came up. The ballast was thrown out for three or four yards on the Radstock side of where the engine got off; that was on the low-rail side. There was one man on the Frome side of him and there were two on the Radstock side of him, opening out the ballast, as the passenger-train was coming up.

Mitchell denies that Brown was in the position that he states, and states that he could not have been using a beater, for the road had all been packed, and he was only filling in, and he further states that Brown was standing between him and Radstock.

George Viner is a ganger on the Great Western Railway, from 116 m. 20 ch. to 118 m. 40 ch., and has been so for eight years. He was working on the 7th September four miles from the point of the accident. Thomas Rendell told him of the accident, and they went to the spot about half an hour after the accident happened. He took the ballast out of the broken chairs, and put in new chairs, and he helped to put in three metals. He did no packing, and he threw in no ballast. He knows where the engine first got off. He did no work at that point. He worked between the point where the engine got off the rails and the point where it came to a stand. He saw the engine-driver's fireman come up with Inspector Hinks and go to the spot where the engine first got off. He was at the engine when they came to it, and Inspector Hinks asked him for the gauge, and he carried it down to the spot where the engine first left the rails. It was not true that he was at the spot where the engine first left the rails when inspectors Hinks and Robson came to that spot. Of his gang one was with him near the engine, and three had gone to Radstock for some tools. He was standing by the engine doing nothing when Hinks and Robson arrived. Sydney Parfitt, one of his gang, was on the other side of the engine, but he cannot say

what he was doing. After the accident neither he nor any of his gang touched anything at the spot where the engine first got off the rails, either when Hinks and Robson arrived or at any other time, except to carry the gauge there for Hinks to take the gauge and level of the road. He got the gauge from the Frome side of the bridge, near the spot where the accident occurred. Hinks and Robson were at the point where the engine left the rails when they asked for the gauge, and he fetched it from a spot half-way between the bridge and where the engine stood after the accident. He now corrects his statement that he was under the bridge when Hinks and Robson arrived. They got down opposite the engine, and he walked towards them and met them half-way between the bridge and the engine. He did nothing whatever before he met Hinks and Robson, except to look on.

Conclusion.

There is, in this instance, no suspicion, or imputation of any kind, against the engine. It was travelling along, round an easy curve of about 30 chains radius, and up a rising gradient of 1 in 70, at a speed of about 15 miles an hour, when, first the leading, and next, as they dropped, the trailing wheels left the rails. Nothing was found to be wrong with it after the accident, and it has ever since been continuously at work. There can be no doubt that in the course of the repairs which were in operation on that part of the line, the platelayers allowed the train to approach them without any warning to the engine-driver, at a time when the rails were not in a sufficiently good condition of adjustment to allow the engine to pass over it safely. The evidence, above quoted, of the inspector and others connected with the permanent-way, was conflicting, and was given in an unsatisfactory manner.

I have, &c.
H. W. Tyler,
Capt. R.E.

The Secretary,
Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Company on the 12th November.

GREAT WESTERN RAILWAY.

Sir, *Birmingham, October 7th,* 1876.

In compliance with the instructions contained in the Order of the 4th inst., I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision which occurred on the 21st ultimo at Snow Hill station, Birmingham, on the Great Western Railway.

A passenger train from Hatton to Birmingham ran into a train of empty coaches which was standing at the down-line platform at Birmingham station.

Two passengers in the Hatton train complained at the time of being shaken, but they appear not to have been injured, as they have been satisfied, by one of them being provided with a new hat in place of the one that was damaged in the collision.

On the date in question, the 10 p.m. train from Hatton consisted of an engine and tender, a break-van, five passenger coaches, another break-van with the guard in charge, and a slip-coach at the tail of the train.

It left Hatton 10 minutes late, and arrived in Birmingham about 10 minutes late.

The approach from Hatton to Snow Hill station, Birmingham, is through a tunnel in which there are two lines of rails. The station commences at the mouth of the tunnel where the two lines diverge into four lines of rails through the station. The two central lines are through lines, which, in addition to the loop-junctions at the mouth of the tunnel, are also provided with scissor crossings about the centre of the station. Trains can be diverted to the platforms on entering the station, or they can be run over the central through lines to the centre of the station, and then turned at the scissor crossing to the upper end of the platform. The points and signals are interlocked, and are worked from raised signal-cabins placed at each end of the station. The signalman at the south end of the station, after giving "line clear," and taking on the train from Hatton, lowered his signals for the train to run in to the down-line platform, through the junction at the south end of the station. When he did so, he had altogether forgotten the train of empty coaches which was standing at the platform close by and within sight of his cabin; a part of this train had been brought to the platform through the points which he had worked from his cabin. The train of empty coaches had been made up, and placed at the down-line platform about 10.15 p.m. The passenger train arrived about 11 p.m., and ran into the train of empty coaches at a speed of about five or six miles an hour. The engine of the passenger train was slightly damaged, and the last coach of the train of empties was damaged and thrown off the rails.

The signalman who committed this mistake bears a very good character. If he had looked along the railway, as he should have done, before lowering his signals for the passenger train, he would have seen the train of empty coaches at the platform.

He has been 20 years in the Company's service, about 13 years of that time signalman, and he has been employed for two years as signalman in the south cabin at Snow Hill station. He should have turned the passenger train through the scissor crossing to the upper end of the down-line platform, instead of turning it through the junction at the east end of the station.

I have, &c.,
F. H. Rich,
Colonel, R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th October.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade,
(Railway Department,)
Sir, *25th September* 1876.

I have the honour to report, for the information of the Board of Trade, in compliance with the order of the 6th instant, the result of my inquiry into the circumstances connected with the accident which occurred on the 2nd instant, at Blackburn junction, Accrington, on the Lancashire and Yorkshire Railway.

In this case, as an excursion train from Ewood Bridge to Blackpool and back was proceeding on its return journey through facing-points at the Blackburn

junction, Accrington, five carriages and the front wheels of a sixth left the rails, in consequence of the signalman shifting the facing-points.

Seven passengers have complained of injury, the most serious case being one of fractured ribs. No servants of the company were injured. Some of the carriages were slightly damaged.

The train in question left Blackpool at 7.25 p.m., 10 minutes late, and consisted of engine, tender, and 26 vehicles, including three break-vans (with a guard in each), there being two coaches coupled to each break-van with continuous breaks. There were about 900 passengers in the train, which arrived at Accrington station (where it was not timed to stop) at 9.30 p.m., about three-quarters of an hour late, time having been lost at Preston junction—in collecting tickets—and at other stations. In consequence of the signals being against the train at the Manchester junction (which is at the Manchester end of the Accrington triangle), the driver, after passing the Blackburn junction, where he had been checked, stopped clear of the fouling point of the Manchester junction, when, owing to the length of his train and the short distance between the two junctions, half of his train, from the 14th vehicle backwards, was on the Blackburn side of the Blackburn junction facing points. After a detention of two or three minutes the driver again started—on the Manchester junction signal being lowered—but immediately feeling a check, stopped as soon as he could, after having proceeded six or seven carriage lengths. It was then found that the engine, tender, and 13 vehicles next in order were on their proper line, that the 14th was off the rails, the 15th off the rails and canted over, the 16th turned over on its left side, the 17th off the rails and canted, the 18th off the rails, the 19th off the rails with its front wheels and its hind wheels on the Colne line, the 20th on the Colne line, and the six rear vehicles still on the Blackburn side of the facing points.

The signalman on duty in the Blackburn junction cabin had acted as a signalman for six years, and had been employed there for 14 months; he had come on duty at 2 p.m. to remain till 10 p.m. He was alone in the cabin at the time of the accident. He got the "be ready" signal for the excursion train at 9.26, and "train on line" at 9.33; but the Manchester junction not being clear he made the road right by pulling over his facing-point lever (the points in their normal position standing right for Colne) but kept his signals at danger, and after having brought the train nearly to a stand, called the driver forward with a green hand light. He was perfectly aware the train had stopped, and was standing with nearly half its carriages on the Blackburn side of the facing-points (which were almost directly under the cabin windows), and he consequently would not accept another train for which he got the "be ready" signal. He then entered the time of the excursion train's arrival (9.35) in his register, and turning round and seeing the facing-point lever out of its place, he, without thinking of what he was doing, put it back into its normal position a short time before the train again started. When it did so, some men in the yard called out to him, and then, remembering what he had done, he tried to reset the facing-points, but was unable to move them.

This accident, then, was caused by a very singular act of forgetfulness, frankly acknowledged, on the part of an experienced signalman of (as I am informed) previously unblemished character.

There cannot be a stronger instance than the present of the value of some arrangement, such as a locking-bar, by which a signalman can be prevented from moving facing-points while a train is standing on or passing over them. Had a locking-bar been fixed at this junction, the present accident could not have occurred; and it is much to be regretted that the Lancashire and Yorkshire Company should have allowed so long a time to elapse since the value of locking-bars was fully recognized, without having had one fixed at this important junction.

Although the present accident was not caused by the want of proper accommodation at Accrington station, I cannot refrain from again drawing attention to its admitted inadequacy for its large and increasing traffic, and from urging upon the Company the necessity of losing no unnecessary time in remodelling it.

I have, &c.,

C. S. Hutchinson,
Colonel R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 7th October.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade,
(Railway Department,)
21st September 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the order of the 13th instant, the result of my inquiry into the circumstances connected with the collision, which occurred on the 5th instant, at Halifax station, on the Lancashire and Yorkshire Railway.

In this case, a special goods train, consisting of engine, tender, six waggons, and a van, on its return journey from Lowmoor to Liverpool, ran with considerable force into a train of empty carriages standing in a loop line at Halifax Station.

The driver and fireman were injured.

The engine (which mounted the platform) and three waggons were damaged, one waggon having been completely broken up. Thirteen empty carriages (eight belonging to the Lancashire and Yorkshire Company, and five to the Great Northern Company) were also damaged, three of them having been broken to pieces.

The approach to Halifax station from the Lowmoor direction is through a tunnel, nearly three-quarters of a mile in length, terminating about a quarter of a mile from the Lowmoor end of the platforms. The line through it falls towards the station, on a gradient of 1 in 235, the same gradient prevailing for some distance on each side of the tunnel. The distant-signal is fixed on the Lowmoor side of the tunnel, and the home-signals 300 yards from the tunnel mouth. In the tunnel, and 600 yards from the Halifax end of it, there is a fixed green light and audible treadle-signal, to give drivers an intimation of their position. About 100 yards inside the home-signals, there are facing points leading to the loop line in which the empty carriages were standing. The points and signals at the Lowmoor end of Halifax station are interlocked, and the traffic is worked on the block system, Hipperholme, 1½ miles from Halifax, being the next block station in the Lowmoor direction.

The evidence is as follows:—

John Wadesworth, signalman at Ovenden junction, Halifax, stated as follows:—I was on duty on the night of 5th September. I received the "be ready" signal for a goods train at 11.35 p.m., and the "on line" signal at the same time. My home and distant-signals then stood at danger, because I had the Lowmoor to Halifax goods train standing upon the main line at the east end of the station with the brake-van

foul of the loop-line crossing through which the special goods-train was afterwards turned. Before the special goods train arrived the Lowmoor goods train was drawn into the station. Before I can set any waggons on to the coal drops, it is necessary to set the up-platform loop points. The points stood in that position when the special goods train emerged from the tunnel. The special goods train arrived running at the rate of about 50 miles per hour. The driver never whistled at all when he passed my home-signals, which were at "danger," but ran forward into the loop line, coming into collision with a number of empty carriages, smashing three to pieces and damaging the others. On seeing the goods train approach at this high rate of speed, I took hold of the point lever to set the road for the main line, but hesitated seeing that there would be loss of life if I had reversed the points, because the guard of the other train was in his brake-van, which stood upon the main line. The collision occurred about 11.37 p.m.

William Morris, goods guard 12 months :—I left Liverpool at 12.35 p.m., with a load of waggons for stations along the road to Lowmoor, which we reached at 9.35 p.m. I had come on duty at 6.30 a.m., and was waiting for an engine till 11.55, when I made up my load. Nothing particular occurred on the journey to Lowmoor, except that we could not leave six waggons at Sowerby Bridge from want of room, owing to heavy grain traffic (there were already 60 waggons there), and as these six waggons could not be received at Lowmoor, we brought them back to leave at Sowerby Bridge on the return journey. We left Lowmoor at 11.25 p.m., having been 40 minutes shunting, 20 minutes taking coal and water, and detained 50 minutes by other trains in the way. Except at the coal stage I know neither the driver nor fireman could have left their engine. We had no signals against us from Lowmoor, the train consisting of engine, tender, six loaded waggons of grain and my van. I was alone in the van, and no one was on the engine but the driver and fireman. I don't know what the distant-signal at Halifax was showing, as I was making out my book (this signal is visible a long way out). I felt the driver shut off steam before he passed the fixed signal in the tunnel, his speed before this being from 15 to 19 miles an hour; from this time the speed decreased. I saw that the home-signal was at danger, and put my break on when we were near it. We then hit the carriages, and I was thrown down on my back, but the van did not leave the rails; my break was full on, and the speed from 10 to 12 miles an hour when we struck. I did not hear the bell ring in the tunnel and have never done so. I did not feel the driver reverse. The fireman told me he hardly knew a signal when he saw one. The driver was too much hurt to say anything.

Thomas Sumner, fireman and spare driver, firing for four years, and acting as special driver for two years :—I came on duty on the morning of the 5th at 5.30 a.m. to work till 5 p.m. as pilot fireman between Liverpool and Sandhills. I left the pilot engine about 11, with instructions to take a special train to Sowerby Bridge and back, with a strange engine and fireman, and I started at 12.35 p.m. for Sowerby Bridge, and was told at Fazakerley junction (about five miles from Liverpool) that I should have to go to Lowmoor. I had been in charge to Lowmoor four or five times before, and have been several times as fireman, though I don't remember having been the journey for the last 12 months. We reached Lowmoor at 9.35 p.m., and started back at 11.25 p.m., with six waggons and a break van. We turned the engine at Lowmoor. I had something to eat and some tea, which I had with me, but did not leave the engine, nor did the fireman. I had no signals against me on the road, and I did not see the Halifax distant-signal, as I was firing at the time, my mate being a stranger. The first signal I saw was a green light in the tunnel, which at that time I thought was the distant-signal from the junction, as I knew it used to be. As a rule the distant-signals show a white light. I heard no bell ring as I passed this signal, my speed at it being from 15 to 20 miles an hour. I had shut off steam shortly after entering the tunnel and before reaching the green signal. I let the engine run until I saw the home-signal against me from the tunnel mouth; upon this I reversed and got steam on, but the lever flew forward again, and I had not time again to reverse before striking the carriages, at a speed of 10 or 12 miles an hour. We neither of us jumped, and both went over with the engine. I am now fit for duty. We were alone on the engine and only the guard was in the van. The day previously (Monday) I had been on duty from 5.30 a.m. till 11 p.m. I had gone off duty at 5.30 p.m. on Sunday, having been on duty from 4.45 p.m. on Saturday till 5 a.m. on Sunday, and going on duty at 9.30 a.m. on Sunday morning. My duty is more severe owing to my being both fireman and driver. I spoke to the shed foreman about the number of hours I had been on duty, but did not object to going out.

Daniel Hearney, cleaner, at Sandhills, about six months; stoker before this about two months with a stationary engine. I had been employed a good many times piloting about Liverpool, but only about five times on the main line. I had been once through Halifax before. I commenced work at 8 a.m., and joined the engine at 11 a.m. The day before I had been on duty about 11 hours. We reached Lowmoor all right, and prepared for the return journey, neither of us having left the engine there, having had something to eat and our tea on the engine. I was sitting by the break and the driver was standing, with his hand on the regulator, by the reversing lever, as we approached the Lowmoor end of the Halifax tunnel. I did not see the distant-signal nor do I know whether the driver did. No fire had been put on since we left Lowmoor until the driver put some on in the tunnel. Directly after this, and when we were very near the Halifax end of the tunnel, the driver shut off steam and called to me to put on my break. I was just getting it tight on when we had the collision. The driver reversed and put on back steam directly after shutting off steam, but I do not remember the reversing lever flying forward. We neither of us jumped off. I was not expecting the collision. I went over with the engine, and had my head cut and was shaken. I went off duty two days, but am now at work again. The engine broke loose from the tender. We were both thrown on the ground. I did not hear the bell ring in the tunnel. Some of the carriages took fire.

This collision, which resulted in considerable destruction of rolling stock, though happily not of life, was caused by the driver of the goods train failing to obey the Halifax station signals, which were against him. Even supposing him to have been misled (as he alleges) by the green fixed signal in the tunnel, he could, on emerging from the tunnel—had he been maintaining a proper look-out for the home-signal, and been approaching an important junction at a judicious rate of speed—have stopped his comparatively light train in the quarter of a mile that intervened between the tunnel mouth and the point of collision.

I think, however, that it is very probable that the driver was asleep upon his engine when approaching Halifax. He had been on duty no less than 35½ hours out of the 42 hours next previous to the collision, and 18 hours consecutively on the day of its occurrence, and might well have been overcome by drowsiness; and his fireman, being ignorant of the road, would not know where to rouse him.

In explanation of the long hours which this driver was on duty, I am informed that on the day of the collision 18 special engines had to be employed, and 10 drivers were sick. Nothing can, however, justify the practice of sending drivers on a duty which will be certain to detain them beyond the reasonable limits of a day's work, and the practice becomes still more

reprehensible when a driver (as in this case) is accompanied by a very inexperienced fireman.

It is questionable whether the fixed green light in the tunnel is altogether judicious. It might possibly (though I do not believe it did in the present instance) mislead a driver who had forgotten what it meant. The same objection does not apply to the audible signal.

I have, &c.

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the Company on the 26th October.

LANCASHIRE AND YORKSHIRE RAILWAY.

Sir, *Liverpool, October 13th,* 1876.

In compliance with the instructions contained in the Order of 20th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 17th ultimo, close to Great Howard Street junction-cabin, Liverpool, on the Lancashire and Yorkshire Railway.

A part of the train, due to leave Exchange station, Liverpool, at 1.20 p.m., got off the rails; the fireman was killed; the engine-driver, second guard, and four passengers were injured. The injuries of the guard and passengers are believed to be slight.

Great Howard Street junction-cabin is about a third of a mile from the Exchange station. It is the place where the lines from the goods-yard join the passenger lines. The junction is protected by home and distant signals which are worked from a raised cabin close to the junction-points, and interlocked with the points. On the day in question, which was Sunday, a gang was employed in relaying the part of the railway adjacent to the cabin. The gang was employed by Mr. Smith, who has a contract with the Company for this class of work. The relaying was done on the Sunday, as there are fewer trains on that day. The contractor's men went to work about 5.0 in the morning, and left work about 1.0 p.m., having done all they thought was absolutely necessary for trains to pass over safely. One spike had been put in on the inside of each chair, but the two trennels which should have fastened each chair on the outside had not been put in, as the ganger in charge of the work stated, that the relayed part of the line was not sufficiently adjusted and settled for the trennels to be put in. The fish-plates at the joint where the old rail ceased and the new rail began were put on; two out of four bolts were put in the fish-plates of the old rail at the west side, but the two bolts of the fish-plate through the new rail were not put in, as the rail was not close enough up to the old rail for the bolt holes to meet, and although the foreman stated that he could have pulled the rail, so as to enable him to put the bolts in, he thought it unnecessary to do so. The corresponding joint on the right or east side rail was also fished, and the fish-plates were kept in their place by one bolt being put through the old rail, and one bolt through the new rail. The permanent-way men of the Lancashire and Yorkshire Railway Company who are in charge of this part of the line, and another gang of the Company's from an adjacent length, were at work at the same time and place as the contractor's men. They were there for the purpose of removing the old materials. The Company's men remained on the spot after the contractor's men had gone away, and the foreman of the Company's platelayers, who is in permanent charge of this part of the western line, noticed, when an empty waggon-train was passing, that some of the wheels struck heavily at the end of the western rail-joint where the old rail ceased and the new rail began. On examining this joint after the train passed, he found it to be defective; he took off the fish-plates, and took one of them to the forge, which is close by, in order to file it, and make it fit better, intending then to put it back in its place. While he was in the forge, and when he had just completed the work, he heard the passenger-train approaching, and he ran out to stop it. The rest of the men who were near the spot, held up their hands and signalled to the driver of the passenger-train to go steadily. The distant and home signals at the junction-cabin had both been taken off for the passenger-train to pass, as the signalman was not aware that anything was wrong with the road, and he believed it to have been left perfect, when the contractor's foreman and gang left the work. He, however, held out a green flag to the driver of the passenger-train. The passenger-train, which consisted of an engine and tender, and 15 coaches, 10 of which were coupled together with continuous breaks, approached at a speed of about seven or eight miles an hour. The driver shut off steam as he approached the junction, both because he knew that part of the line was being relayed, and he also saw the platelayers giving him a caution-signal with their hands as he approached. He did not see the green flag held out by the signalman. The fireman applied his tender-break when the driver observed the caution-signals, but the driver did not consider it necessary to whistle for the guard's breaks or to reduce the speed of his train any further, as no danger signal was shown him. When his engine reached the defective joint, where the fish-plates had been taken off, it mounted the new rail, ran along the rail and on the top of the outside of the chairs for about 15 yards, and then dropped on to the sleepers. As soon as the driver felt his engine mount, he reversed and put on steam, and he believes that his fireman applied his tender break. When the engine got on to the ballast and sleepers and met the crossings and guard-rails connected with the junction, it turned completely round, separated from the tender, and fell over on its right side. The tender separated from the coaches and came to a stand in the six foot between the up and down lines, a short distance beyond the engine. The seven leading coaches of the train also left the rails. Four of of them had passed beyond the faulty joint and three of them were at the Liverpool side of the faulty joint. The rest of the train remained on the rails. All the coaches were detached from the tender, but remained coupled to each other. One guard was travelling in the break-van which was the third coach from the engine. The four coaches behind this break-van were coupled to it by continuous breaks. The second guard was in the break-van which was the last vehicle but two of the train. The five coaches in front of this break-van were also coupled to it with Fay's continuous breaks. This guard was thrown from his bench and slightly hurt. The coaches which had not reached the defective joint were probably thrown off the rails by the sudden stoppage of the train. The part of the line which had been relayed between the faulty joint and the crossings beyond the junction-cabin was a good deal disturbed and damaged. The chair on the old part of the line which was next to the faulty joint had been broken before the fish-plates had been taken off, and before the accident occurred. The fracture of the chair was on the outside of the rail across the seat of the chair, and probably did not affect the accident, which appears to have been caused by the defective state of the joint of the rails of the permanent-way opposite the Great Howard Street B junction-cabin.

The signalman on duty in B cabin, who had been noticed by his inspector on the day before, that the relaying was to take place, did keep his signals at

danger against all trains while he saw the contractor's men at work on the line, although the contractor's foreman of the gang does not appear to have communicated with him before he went to work.

This foreman went away in the 1.20 p.m. train which met with the accident. He does not appear to have finished his work in a proper manner before he left it, nor did he take the precautions which, in accordance with the Company's rules, he should have done, by sending out a flagman while he was carrying on his work. The signalman in B cabin believing the line to be safe when the contractor's men left, (he did not observe the foreman of the Company's permanent-way gang take out the fish-plates or meddle with the line after the contractor's men had left,) was consequently perfectly unaware of its unsafe condition when he lowered the signals for the passenger train, but he put out his green flag on seeing the permanent-way men (who were engaged near the place picking up some sleepers) hold up their hands as a caution signal to the driver of the passenger train. The foreman of platelayers showed his anxiety to provide for and leave the line safe for trains to run over, by taking off the fish-plates which he observed to be badly fitted and inefficiently put on, being only partially bolted; but this man unfortunately, in his hurry to do the work, neglected to comply with the rules of the Company, and send out a flagman to stop approaching trains. He also omitted to caution the junction signalman whose cabin adjoins the smithy. The Company's foreman did not consider himself in charge of the work while the contractor's men were there, but I would suggest that in future no contractor's men should be allowed to interfere with the works or the permanent-way which may in any way affect a passenger line of rails, without one of the Company's people being placed in charge over the contractor's foreman.

I would recommend that the rules, as regards a flagman being sent out, be made more decided and distinct.

The foreman of the Company's platelayers gang has been committed for manslaughter by the coroner.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

F. H. Rich,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 22nd December.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
6th September 1876.

Sir,

In compliance with the instructions contained in the Order of the 22nd ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 16th ultimo, at New Street station, Birmingham.

Some empty coaches belonging to the Midland Railway Company were shunted against a passenger train belonging to the London and North-Western Railway Company. Two passengers in the Midland train and one person who was standing on the platform have complained of being hurt, but their injuries are believed to be slight.

On the day in question six coaches which were to form the Midland 1.20 p.m. passenger train from Birmingham to Derby were placed in what is named the Gloucester siding at New Street station.

At the time these six coaches were placed there, seven other empty coaches were standing behind them in the same siding, which were to form the 2.15 p.m. London and North-Western train to Sutton Coldfield. When the engine-driver of the pilot-engine placed the six Midland empty coaches in the Gloucester siding he had 18 coaches attached to the pilot engine; and the shunter on duty, after uncoupling the six empty coaches, sent the pilot engine forward into the tunnel with the 12 coaches that remained attached to it, intending to put those 12 coaches in another part of the station; but as soon as the pilot engine-driver drew out from the Gloucester siding, the six coaches he had left there sprung forward (owing to the buffers having been squeezed together), and fouled the line to London, on which the 1.10 p.m. London and North-Western train was standing, waiting to depart for Leamington.

The shunter on duty at the south end of the New Street station is provided with a lever at the mouth of the tunnel at the left side of the line, which rings a gong 137 yards inside the tunnel. One beat of this gong directs engine-drivers to stop, and two beats direct them to push their trains back. This gong is used for all shunting purposes, as the tunnel is close to the south end of the station, is very dark, and is on a gradient of 1 in 50 rising towards Rugby. It appears to be the best means for the shunter to communicate with the drivers of the pilot engines. The signalman who works the points and the signals for starting trains is placed in a cabin close to the tunnel mouth at the down side of the line, and at the opposite side to where the gong lever handle is placed.

When the driver of the pilot engine drew the empty coaches into the tunnel, it was intended to bring him back on the main line, and the signalman made the points accordingly; but when it was found that the foremost of the six Midland coaches fouled the main line, the points were changed, in order to bring the pilot driver back on the same line, so that he might push the six Midland coaches further up the siding, which was a dock siding. During the interval of time when the six Midland coaches had been left in the siding, and when the pilot driver was called back, several passengers had got into the Midland coaches; and when the pilot driver was called, he was not aware that he was being called back to push these coaches gently up the siding. He pushed them more violently than he should have done, and drove the London and North-Western empty coaches that were standing behind them so hard against the stop buffers as to damage two of them.

The shunter should have informed the driver of the pilot engine, before he brought him back, of what he wished him to do, instead of only giving him the ordinary signal of two beats on the gong to bring him back.

The shunting in New Street station, which is situated between two tunnels and at the bottom of steep inclines, is attended with some difficulty and danger; and in order to avoid accidents of the kind in future, the Company have added to their regulations for working the tunnel a third signal, of three beats of the gong, which means "Come back gently," in addition to the two signals of one for "Stop" and two for "Come back," which have existed up to the present time. This seems, as far as possible, to meet the difficulty. The yard shunter remains outside the tunnel while communicating his orders to the drivers of pilot engines, who sometimes have to go considerable distances into the tunnel. The station accommodation at New Street is insufficient for the work that is done there.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

F. H. Rich,
Colonel R.E.

Printed copies of the above report were sent to the London and North-Western and Midland Railway Companies on the 28th September.

To accompany Colonel Rich's report
dated 15th October 1856

PLAN OF LANCASHIRE & YORKSHIRE RAILWAY AT

LIVERPOOL.



Scale 88 feet 1 Inch.

100 feet

LONDON AND NORTH-WESTERN RAILWAY.

SIR, *Liverpool, 13th October* 1876.

IN compliance with the instructions contained in the Order of the 22nd ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 18th September, at Wednesbury station, on the London and North-western Railway.

The engine and two coaches of the 7.5 p.m. passenger train from Walsall to Dudley got off the rails at the junction points at the Walsall end of the Wednesbury station. Two passengers have complained of being hurt, but their injuries are believed to be slight.

The single line from Darlaston to Wednesbury joins the double line of railway between Dudley and Walsall at the eastern end of Wednesbury station.

The junction facing-points on the line to Dudley are what are called three throws. One set of facing-points leads to the Wednesbury platform, on the road to Darlaston, and the second set leads across to the sidings and are used for the purpose of getting trains into those sidings when the two station platforms on the line to Dudley and the platform on the line to Darlaston are occupied with trains.

On the day previous to the accident a gang had been engaged in relaying the junction in question. They had commenced work about 5 o'clock on the Sunday morning, and had completed it, with the exception of boxing up the sleepers, about 7 o'clock on the Sunday evening. The ganger who was in charge of the work only put in one connecting rod to the facing-points leading to the Darlaston line. He stated that he could not get in the second, owing to some of the boxing of the connecting rods leading to the signalman's cabin interfering with the holes in the switches in which the second connecting rod had to be fixed. The connecting rod which was put in was fixed with a cotter, and it was necessary to drill two other holes in the switches before the second connecting rod could be put in. The ganger stated that he could not do this on the Monday following, as the line was too much occupied with trains, and he had not got his drilling instrument at hand, but he examined the points on the Monday morning, and again on the Monday evening before leaving work, and he thought they were in safe working order. These points worked all right up to the time of arrival of the 7.5 p.m. train from Dudley. This train, which is due at Wednesbury at 7.13 p.m., reached the station at 7.24.

The signals were lowered for it to proceed to the platform on the line to Dudley. These signals are worked by a signalman stationed in a cabin close to the three throw junction-points. The signals and points are arranged on the locking principle, so that the signal for the passenger train could not be lowered until the lever in the signalman's cabin which works the facing-points was pulled over to its proper position. As the passenger train reached the junction and was about to pass through it at a speed of about 6 miles an hour, the engine and two leading coaches left the rails at the junction-points. The train came to a stand as the third coach reached the points. On examining the points after the accident, the cotter by which the connecting rod between the points was secured had dropped out of its place, and the points consequently did not move properly when the signalman pulled he lever which works them. This cotter was subsequently found on the ballast. It could not possibly have dropped out and thus released the connecting rod if it had been properly put in by the foreman of the gang on the Sunday night, and if it had escaped his observation in his hurry to complete his work on the Sunday night he should have observed it on the Monday morning and afternoon when it was his duty to examine these points and to have put in a second connecting rod. When he put in the cotter he did not open the split ends to prevent its dropping out.

The Company propose to put a locking bar to these points, and I would suggest that locking bars should be put to all the facing points, in the station.

It would, however, be very desirable that this station, which appears to be a very busy one, should be rearranged, and that the Darlaston branch should be converted into a double instead of a single line, by which means several sets of facing-points could be done away with.

I have, &c.,
F. H. RICH,
Colonel R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th October.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
SIR, *Whitehall, 23rd October* 1876.

IN compliance with the instruction contained in the order of the 3rd instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the two collisions that occurred on the 26th ultimo, one at Acton Bridge station, and the other at the south side of Hartford station, on the London and North-Western Railway.

Acton Bridge station has sidings on the up and on the down side, and a cross-over road between the up and down lines of rails. It is protected by the ordinary home and distant signals, and is also provided with starting signals in connection with the block telegraph, which is worked on this part of the railway. The signals and points are interlocked, and are worked from a raised cabin at the south end of the down passenger platform. This station is about $2\frac{3}{4}$ miles to the north of Hartford station. There is a block telegraph station at Hartford junction, which is about $1\frac{3}{4}$ miles to the south of Acton Bridge station. Each of these two latter stations are also protected by home and distant signals, which are interlocked with the points and worked from raised cabins.

On the day in question a train arrived from Northwich at Acton Bridge, and was put into the siding at the down side of the line, while its engine went across to the sidings on the up side to fetch a waggon of fruit, which was to be taken on to Warrington. The waggon of fruit had been brought out on to the up line and shunted, so as to be placed behind the engine, and the signalman on duty had opened the cross-over road for the engine and waggon of fruit to run across and back on to its train in the siding at the down side, when the signalman and station-master observed a coal train approaching from Warrington. They thought the speed of the coal train was such that it could not stop, so the signalman reversed the points of the cross-over road, in order that the engine of the coal train and the engine which was attached to the waggon of fruit might meet "end on," instead of running into each other while one was on the crossing. He also held out a red hand-lamp to the driver of

the engine attached to the waggon of fruit, which was moving northwards at the time towards the coming coal train. Both the up and down distant and home signals at Acton Bridge, which are good signals, were at "danger" when the coal train reached them and passed them. The engine-driver of this train acknowledged that the signals were against him, and stated that he was about to pull up at the home-signal, when he observed a green light, which he thought was held by the station-master; and he also observed a white light, which he thought was a hand-lamp held by the signalman to call him on. The green light which he observed was at the head of the Northwich engine; the white hand-lamp which he may have seen was probably the one used by the breaksman of the Northwich train in signalling his engine-driver during the shunting operations. The rules of the company are distinct on this subject, viz., that drivers shall not pass a home-signal at "danger," unless he receives verbal instructions to do so, from the signalman who works that home-signal. The engine of the special coal train, which came from Springs Branch and Warrington, was running at a speed of about six or seven miles an hour when it struck the engine of the Northwich train, which had not come to a stand, although the engine-driver had reversed his engine and put on steam before the collision occurred. This latter engine-driver was thrown off his engine by the collision. His fireman, after giving the tender-break one or two turns, jumped off, and the engine, being set in backward motion by the collision, ran away on the up line towards Hartford with the regulator open and the waggon of fruit in front. It passed Hartford junction and Hartford station at great speed, and overtook an express goods train which was proceeding from Liverpool to London, about three-quarters of a mile to the south of Hartford station, while it was running down a falling gradient of 1 in 330. The express goods is reported to have been travelling at a speed of about 20 miles an hour at the time of the second collision. The waggon of fruit was broken to pieces and thrown off the rails, and the tender of the Northwich train was thrown off the rails and slightly damaged; the engine was also slightly damaged. The break-van at the tail of the express goods train and the two waggons next to it were thrown off the rails and considerably damaged. The guard and two drovers who were travelling in this break-van were injured. The seven waggons next to these became uncoupled by the collision, and came to a stand about 700 or 800 yards further on. The hind wheels of the last of these seven waggons were off the rails; the springs were knocked out, and the load of cheese which it contained was upset. The engine and the rest of this express goods train were brought to a stand about 300 yards further on by the engine-driver, who felt the collision at the time it occurred, but did not know what had happened until he had brought his engine gradually to a stand, and gone back to examine his train. This express goods train consisted of an engine and tender, 32 loaded and five empty waggons, and a break-van at the tail of the train. Nothing was thrown off the rails by the first collision, which occurred at Acton Bridge station, but the engine of the special coal train was slightly damaged. The signalman at Acton Bridge, as soon as the first collision occurred, telegraphed to Hartford junction that an engine was running away on its proper line, but the signalman at Hartford junction, who was engaged at the time with a down train, and who, immediately after receiving the message from Acton Bridge, saw the runaway engine pass his cabin, could not understand what the Acton Bridge man was telegraphing. When he saw the runaway engine pass he at once telegraphed it to Hartford, and the receipt of the message was acknowledged from that station; but neither the man at Hartford junction nor the man at Hartford station had any means of turning he e ngine off the line into a siding, or of preventing he accident. The man at Hartford station blocked tthe line in both directions as soon as the runaway engine passed, as he thought it would overtake the express goods, and would probably foul both up and down lines. The engine-driver and fireman of the express goods also took measures to stop trains on both lines as soon as they had brought their train to a stand after the collision.

All the parties connected with this accident seem to have done their duty to the best of their ability, except the persons with the special coal train from Springs Branch. The engine-driver of this train overran both the Acton Bridge distant and home signals, and ran into an engine about 165 yards inside the home-signal. This caused both collisions.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

F. H. Rich,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 22nd December.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
Whitehall, 24th October 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 3rd inst., the result of my inquiry into the circumstances connected with the collision which occurred on the 29th ultimo, at Ward's siding, near Churwell, on the Manchester and Leeds section of the London and North-Western Railway.

In this case the 12 o'clock (noon) up passenger train from Leeds for Marsden came into collision with the 11.35 a.m. up goods train from Copley Hill (Leeds) for Liverpool.

Four passengers have complained of slight injury. Two servants of the Company were slightly injured. In the passenger train the engine had its buffer plank and buffer castings broken, and its smoke-box door knocked in, and one carriage had a buffer spindle bent.

No damage was done to the goods train.

Ward's siding is situated intermediately between Farnley junction and Churwell station. It is a block signal-post, provided with home, distant, and starting signals. The up signals, to which only it is necessary here to refer, are situated as follows: the up home-signal (provided with a high and low arm) is 235 yards on the down side of the cabin; the top arm is visible for about 100 yards while passing Farnley junction 600 yards off; it is then lost sight of, and the low arm comes into view uninterruptedly at a distance of 400 yards. The up distant-signal, a coacting signal with the Farnley junction up home main line signal, is visible for a long distance. The line rises from Farnley junction towards Ward's siding on gradients of 1 in 140 and 1 in 162. The collision occurred 120 yards inside the up home-signal, the van of the goods train having been visible only for 270 yards to the driver of the passenger train on account of a curve and cutting. The line is worked on the absolute block system, and the signalman at Ward's siding is instructed not to give "Line clear" back to Farnley junction until the tail of an up train

has passed the up starting-signal, which is some distance in advance of the up home-signal.

The evidence is as follows :—

1. *Joseph Waite*, goods driver 11 years.—I left Copley Hill about 11.40 with a six-coupled engine, No. 1,235, 17″ × 24″ cylinders, 5 ft. wheels, and a train of 32 loaded and 4 empty waggons and a van, Batley being my first stopping place; I had an assistant engine in front, as the load was nearly a double one, to go as far as Batley. The rails being very slippery, I could not get on with the train, and I decided to put off three of the front waggons loaded with timber at Ward's sidings. I stopped clear of the points leading from the up line to the sidings on the down side of the line; and the guard jumped off and spoke to the signalman, and then came up to me and hooked off five waggons. I at once drew these forward, and backed them through to the sidings without delay. The guard then uncoupled the three last waggons, and I went forward, but the guard called me back to give the waggons a further push, and after this I went across on to the up line, and as I was backing on to the train, I saw some steam in the cutting, and said to my mate, "There is something wrong; hold on;" and we stood 8 or 10 yards from the waggons for a moment when the collision took place. The waggons did not move forward. I saw that the up home-signal at Ward's siding was on at this time. As we passed Farnley junction the signals were off for us.

2. *William Colclough*, goods guard 11 years.—I left Copley Hill at 11.40 a.m. with the 11.35 a.m. up Liverpool goods train, Batley being the first stopping-place. The load consisted of 36 waggons, viz., 9 goods, 23 minerals (including 3 timber waggons), 4 empties, and a break-van. We had an assistant engine from Copley Hill. There was a difficulty in getting on, the rails being very slippery. The driver stopped at Ward's siding, and I immediately concluded that he wanted to drop some waggons. I went at once to the signalman, and told him that I wanted to leave three waggons in the sidings. I asked him if he had both lines blocked, and he said he had. I then went back to my van, and put the break fully on, which was sufficient to hold the train with ease when the engine set back against it. I then ran up and unhooked the fifth waggon from the engine, and three waggons were then kicked through the crossing, and the driver had to follow them up to push them clear. He came out again, and had got on to the up line, and was backing to his train when the collision occurred. I had left the fireman to hook on, and I was running down to my break, and was about half-way along the train when the collision took place. I did not see the passenger train till it was close by the home-signal. The blow did not move the waggons far forward. We reached Ward's siding (1½ miles from Copley Hill) at 12.8. We had not been stopped anywhere. The collision occurred between 12.10 and 12.15.

3. *John Jackson*, driver 4 years.—I was driving the 12 o'clock noon stopping passenger train from Leeds to Marsden. My engine was a six-wheeled tank, the driving and trailing wheels coupled, running chimney first. There was a break block on each coupled wheel. I had no continuous breaks under my control. The train consisted of 7 vehicles. I left punctually and stopped at Wortley, where I was detained by the starting-signal (which is also the distant-signal from Farnley) about four minutes. The next signal against me was the home-signal at Farnley junction, which is also the distant-signal from Ward's siding. This signal was lowered just as I commenced moving away from Wortley, and it remained off till I reached and passed it. On a clear day Ward's siding home-signal is visible from the Leeds side of Farnley junction, but it was a little foggy, and I was unable to see it till from the first over-bridge beyond Farnley junction, a distance of 400 yards, and it was then at danger. My speed at this time was 16 miles an hour with steam full on. I shut off steam, and told my mate to apply his break, and finding the break not acting, on account of the greasy state of the rails, I had it eased, reversed and reapplied steam; this was when I caught sight of the train, just after passing through the second over-bridge. The speed was then reduced, and was about five miles an hour when I struck the train. I did not jump off, but the fireman did just as I struck the train. The engine stopped dead, and the van of the goods train mounted the engine buffers. I was not hurt. I whistled very sharp for the guards breaks.

4. *Edward Richardson*, fireman 3½ years.—The Farnley junction home-signal was taken off after we had got about 50 yards past the Wortley starting-signal, and it remained off till we got past it. I saw Ward's siding home-signal from the bridge nearest it; the driver must have seen it sooner, as he whistled, upon which I applied my break before seeing the signal. The break was not eased when the driver reversed, which he did soon after seeing the signal. The speed on my seeing the home-signal at danger was 15 or 16 miles an hour, and it was reduced to 5 or 6 miles an hour on collision. I dropped off about my own train's length from the other train. I tumbled down in the ballast and was slightly hurt.

5. *Joseph Battye*, guard 7 years.—I was in charge of the 12 noon passenger-train from Leeds to Marsden. It consisted of five coaches and a break-van front and rear. I was the only guard travelling in the rear van. We started punctually, reached Wortley at 12.7, and drew up to the starting-signal, where we were kept two minutes. Farnley junction home-signal was off when we started, and it remained off till we were close to it. After passing the junction I arranged some parcels, and on looking out of the left top of the van I saw the goods train. I never heard the driver whistle. I immediately put my break on, the speed being about 14 or 15 miles an hour. I had at this time felt no check; the speed then diminished steadily, and was almost nothing when we struck. The collision knocked me backwards and forwards. I was slightly hurt, and off duty for a day and a half. It must have been about 12.13 when the collision occurred. The day was slightly foggy.

6. *Tom Priestley*, signalman four months, all the time at Ward's siding.—I came on duty at 7 a.m. for 12 hours; mine is a day post only. I work block system to Farnley junction and Morley. My instructions are not to give "line clear" to Farnley junction until the van of a train has passed my up starting signal, and I work strictly to that rule. I received the 11.31 a.m. goods train "on line" from Farnley at 11.54. The line was at this time clear. The train arrived at 12.3, and I never gave "line clear" for it to Farnley. I saw it coming slowly, and the driver called out as he passed the box that he was going to put off three waggons, as he could not draw them. I had not given the train on to Morley. I asked for "line blocked" from Morley, but did not get it at once,—receiving instead "down train on line," which I accepted, and stopped the train at the down stop signal. After this down train had arrived I allowed the goods engine to cross with the waggons. Before the down goods train arrived I had received "line blocked" from Farnley junction. The goods driver had to give the waggons another push to get them clear, and had come out again from the siding, the points of which were still open when the collision occurred. I saw the passenger train when it was about five yards from the van. I had heard no whistling. I have never heard that my up distant-signal did not act properly. I cannot see it from the cabin, and it is not repeated. It had been off for the up goods train. I put it on when the train was opposite the cabin, not being able to open the crossing points unless I did so. I believe it had been put to

danger the day before, as a porter had been down to oil the points, but it was not used for the purpose of covering trains. Nothing had gone into Ward's siding for a month previously. After Farnley had given me "line blocked," he gave me the "be ready" signal for the passenger train, which I acknowledged, and then the two bells for "passenger train on line," though my needle was blocked to "train on line." I gave him one back, meaning acknowledgment. There was no one in my cabin at this time. I was surprised to see the passenger train approaching, as I had not cleared the line. About a week before I had been warned to use my up distant-signal regularly.

7. *Arthur Spencer*, signalman six months, about half the time at Farnley junction.—On the day in question, the 11.35 a.m. goods train from Copley Hill was signalled from Wortley to me at 11.47 a.m. I had the signals off for it, and it passed my box at 11.51 a.m., and I received "line clear" from Ward's siding at 12.3 noon. I then had a special goods train given me on from Wortley at 12.1 noon. I kept my signals at "danger," and shunted this goods train on to the branch. I got the block from Ward's siding before shunting this train; just as I pulled my signals off. I got the passenger train signalled from Wortley at 12.10 noon; it passed my box at 12.11 noon. When I received the passenger train from Wortley I gave it on to Ward's siding, and it was received; the instrument showing "line clear" since 12.3 noon. I had come on duty at about 7 a.m. for 12 hours. I was alone in the cabin. At 12.3 I saw the needle show "line clear." I have no disc in my cabin worked from Ward's siding. I did not see my home-signal, but the goods driver told me he had seen it drop.

The driver of the shunted train at Farnley junction saw the up home-signal fall well off.

This collision was mainly caused by one of the signalmen employed at Ward's siding and Farnley junction having failed to carry out the block telegraph rules laid down for their guidance. The failure occurred most probably from some mistake on the part of Priestly, the signalman at Ward's siding, who admits that he acknowledged a signal from Farnley junction, which he should not have done while his needle was blocked to "train on line." The mistake would not, however, have been followed by serious consequences, had Priestly been in the habit of using his up distant-signal, instead of habitually keeping the lever in the position of "all right,"—a practice which he had been warned against only a week before the collision. As it was, the lever working this signal, when necessarily used on the crossing of the waggons taking place, did not put to danger, as it ought to have done (owing to the apparatus being from disuse in bad working order), the Farnley junction up home-signal, at which otherwise the passenger train would have been stopped.

Though the driver of the passenger train was of course misled by seeing Ward's siding distant-signal lowered (an indication that the section ahead was clear), he could, nevertheless, had he been keeping a good look out for the home-signal, which he certainly could have seen at least 400 yards off, have stopped with the comparatively light train he was driving up gradients of 1 in 140 and 1 in 160 in a less distance than 520 yards, there being at the end of this distance still considerable velocity left in his train when he struck. With continuous breaks under his control, he, no doubt, would have stopped before reaching the goods train.

The up distant-signal at Ward's siding should be provided with a repeater to enable the signalman to know whether the signal is working properly.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

C. S. Hutchinson,
Col. R.E.

Printed copies of the above report were sent to the Company on the 28th November.

LONDON AND NORTH-WESTERN AND GREAT WESTERN JOINT RAILWAYS (CHESTER AND BIRKENHEAD LINE).

Board of Trade,
(*Railway Department,*)
25th September 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the Order of the 12th instant, the result of my inquiry into the circumstances connected with the fatal accident which occurred on the 1st instant to a boy, six years old, who was run over by an engine while trespassing on the line at Tranmere, near Rock Ferry station, on the Chester and Birkenhead (London and North-western and Great Western Joint) Railway.

In this case, as a light engine, running tender first, was returning from Rock Ferry (after assisting up a goods train from Birkenhead to Rock Ferry) to the engine sheds at Birkenhead, at about 5.30 p.m. on the 1st instant, it knocked down and killed on the spot the child in question, who was picked up dead in the 4-ft. space of the down line, about 300 yards on the Birkenhead side of Rock Ferry station.

The driver states that there was a good deal of coal on his tender when he started back (tender first) from Rock Ferry station for the engine sheds at Birkenhead, at about 5.30 p.m.; that he whistled before starting, and looked ahead, but saw no one on the line except a watchman, about ¼ of a mile off; that he neither felt nor heard anything on passing the spot where he was afterwards informed the accident had occurred; that he looked round his engine and tender on reaching the engine sheds, and noticed nothing unusual; that on being informed of the accident at about 7 p.m., he again made a careful examination of both engine and tender, but could find no trace of having run over anyone; that his tender is provided with life-guards.

The fireman corroborates the driver's evidence in all respects.

The only other servant of the Committee who can throw any light on the accident is a watchman employed to prevent trespassing on the line. His evidence is as follows:—

Patrick White, watchman in the Joint Committee's service, employed as such about three months.—I am a pensioner from the Royal Marine Light Infantry; my duties are to warn people off the line, and if they trespass a second time after being warned to summons them; my beat extends from Green Lane Bridge to Rock Ferry, about a mile and a quarter; there are still trespassers, but not so many as there used to be three months ago; they come over at all points, but more particularly at the low parts of the wall; I come on duty at ¼ to 9, and remain till dusk; I have an hour for dinner; I was about ¼ of a mile the Birkenhead side of Rock Ferry station when the goods train passed up; there was then no one on the line that I saw; I was walking towards Birkenhead, about 200 yards from where the accident happened, either in the 6-ft. or 4-ft. of the up line, when I heard the engine returning, and on looking round saw no one on the line or coming up the bank till after the engine had passed me; I then saw several people running up

towards the line on the down side; I ran back, and saw a lad lying in the 4-ft. of the down line, obliquely across, with his head towards Rock Ferry; he seemed to be dead; his head had been struck on the side, and was covered with blood, and one of his hands was crushed; I don't know where the boy lived, nor whether he had been alone when knocked down; I never recollect having cautioned him previously; I have summoned only one person (a man) since I have been employed; he was cautioned, and was fined 5*s.* and costs, about 14*s.* altogether; this was about 25th August last; there has been less trespassing since this summons and the fatal accident.

I was unable to learn how or where the child had actually got on the line.

The fencing along the Birkenhead Railway between Grange junction (near Birkenhead) and Rock Ferry (a distance of about 1¼ miles) consists for the most part of stone walls, originally four to five feet high above the ground outside, with a few short pieces of post and rail and quickset hedge. The level of the ground outside has, however, in many cases been considerably raised by (apparently) the deposit of rubbish and ashes by the inhabitants, so that the effective height of the wall now varies between two feet and the original height, and the ground so raised now forms in many cases a narrow pathway between the back-walls of gardens and the railway wall. I observed in one instance that the surface of a street abutting on the wall had been (without any apparent object) raised to within three feet or so of the top of the wall. There are also occasional spots in which the wall is in a bad state of repair (stones having fallen out), due, no doubt, in many instances, to the action of trespassers; in other cases pointing is much required.

The coping of the wall has, for the most part, a flat top, except that in one or two instances, where it has been raised for short distances, an angular coping been substituted.

There is no doubt an immense deal of trespassing on the line. A large portion of the inhabitants live on one side of the line, and their work lies on the other; similarly with children and the schools they attend, and there being no recognised crossings, paths across are made at all convenient points.

To whatever height the walls might be raised, I do not think the trespassing would be entirely stopped; but I think it is incumbent on the Committee to put the walls in a proper state of repair, and to restore a height of at least four feet from the ground outside, where this has been lost by the alteration of the ground level. This height, if maintained, would be tolerably effectual against the trespassing of, at any rate, very young children.

I would also suggest, whether at a few well considered points it might not be desirable to construct small subways, to the expense of which the local authorities might be fairly asked largely to contribute.

If the above suggestions are attended to, and a vigorous prosecution of trespassers enforced, I believe that the trespassing now complained of might be reduced to a minimum.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the Joint Committee on the 6th October.

MIDLAND GREAT WESTERN RAILWAY OF IRELAND.

Board of Trade,
(*Railway Department,*)
Whitehall, 16*th October* 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the order of the 27th ultimo, the result of my inquiry into the circumstances connected with the collision which occurred on the 16th ultimo, at Killucan station, on the Midland Great Western Railway of Ireland.

In this case, the waggons and break-van of the 3 a.m. down goods-train from Dublin to Mullingar ran back along the down main line at Killucan station, and came into collision with a down special train of empty waggons from Dublin to Moate.

A herdsman travelling in the break-van of the goods-train jumped out before the collision, and complained of injury.

In the goods-train the break-van was broken up, and three waggons were damaged, two badly and one slightly.

In the special train the engine had its funnel knocked off.

Killucan station is situated on gradients falling towards Dublin of 1 in 240, 1 in 215, and 1 in 320, and at 150 yards from the up end of the platforms the line commences to fall still towards Dublin on a gradient of 1 in 120, which continues for a distance of some 750 yards, when it commences to rise in the opposite direction. The down distant-signal is 900 yards from the up end of the platforms, and the collision occurred close to it.

The evidence is as follows:

1. *John Mullen*, driver seven years: I was driver of the 3 a.m. goods train from Dublin, and arrived at Killucan at 8.20 a.m., with 33 loaded waggons and a van, a little late. We were stopped here by signal to take on two waggons, and came to a stand clear of the crossing. A Killucan porter uncoupled me after we had been standing about 10 minutes, I having sent him back to ask the guard where the waggons were to be taken on. While I was standing I saw two or three sprags put in the waggons. I did not set back at all before I was uncoupled by the porter. The train did not begin to move back till after I had crossed the road. I jumped off on seeing this, and put down two or three waggon-breaks, and stuck to one of them as long as I could, and then rejoined my engine; came back with it through the crossing and followed the waggons, but could not overtake them before the collision. I gave the alarm whistle more than once. I was about 9 or 10 waggons off the front of my train when the collision occurred. The other train was in motion, I think. It was raining fast, and foggy. My guard was talking to the porter when the train began to run back; and both these men put down breaks. My fireman never left the engine. I am quite sure I gave the waggons no blow in getting uncoupled from them.

2. *Edwin Murphy*, fireman three years: I got off the engine as soon as we stopped, and while I was looking round it, my mate said to me, the waggons are gone away; this was not 10 minutes after we had arrived. There was no bump given to the waggons that I am aware of. I cannot say whether we ever went through the crossing before the collision. We followed the waggons as far as we could, but could not overtake them. My own opinion is that the man in the van must have eased the break.

3. *Lawrence Mulligan*, guard five months, porter and shunter six years previously: I was in charge of the 3 a.m. down goods-train, and left Dublin at 3.10 a.m. We stopped last at the Hill of Down, and left it with 21 loaded, 12 empty waggons, and a van,

in which there was a herdsman in charge of some sheep of Lord Leitrim's, which we had taken on at Maynooth. We were stopped here by signal, and remained standing for 10 minutes, while I left my van, of which I put the breaks on, and took two sprags with me; one of these I put in one of the 6-ft. wheels of the third waggon from the van, and the other in that of the third from the engine, but I put down no breaks in addition, thinking the sprags and break-van sufficient to hold the train; when I got up to the front of the train the porter was unhooking the engine. The engine eased back to allow the coupling hook to be released, but there was no kick. The waggons then began to move back, the front sprag having twisted round; I at once put it in again, and it twisted, and a third time, and it again twisted, and I then took to the waggon breaks, and put down four or five. The empties were all in front, and I could not get back to the loaded waggons; the rails were very greasy; it was a wet morning. The driver, the porter, and myself, all tried to do what we could, but the train gradually increased in speed, though it never got very fast. Just before the collision I was standing on the 22nd waggon from the van; I jumped off and kept my feet. The herdsman jumped out, soon after the waggons began to move back, into the 6-ft. He said he had not meddled with the van break, and the van was too much injured after the collision to say whether it had been on or off. The sprag in the third waggon from the van was broken. I knew that vehicles would easily run back on this bank.

4. *Owen Hefferman*, porter at Killucan: I was in the stores when the goods train arrived. I then went to ask the guard where the two waggons to be taken on should be placed, and he said next the engine. I returned to the engine and went between the buffers, but was not able to undo the coupling chain until the driver had eased back a small bit, but without giving any blow. The waggons did not move back at once, but the driver had gone forward a small space, and then they began to move. I tried to stop them by putting six or seven breaks down on the 6-ft. side, the guard and driver also trying to stop them, but we failed to do so, and then the three of us each stood on a break handle. I remained on the break handle which was on one of the loaded waggons, till just before the collision, when I jumped off. The herdsman jumped out after I had jumped off; neither he nor I tumbled down. I have no reason to think he had eased the van break. The speed was about eight miles an hour when I jumped off.

5. *John Barry*, station-master at Killucan six years: I walked on to the platform on hearing the goods train arrive. After seeing the train attended to, I returned to the office to make out my cash, and on going out again in about a minute I saw the train running back, and two men standing on the breaks. I ran after the train, and could not overtake it. The engine at this time was following after the train, giving the alarm whistle. I asked the herdsman if he had tampered with the break, but he said that he had not, but that he had seen the guard put it on. He at first made no complaint of being hurt, but about an hour afterwards he said his back was sprained. I found the remains of two sprags, both broken; they were not rotten. Hefferman said the waggons had got a slight kick as he was uncoupling.

6. *Peter McNicol*, driver 12 years, 6 years with the Midland Great Western Railway Company: I had come from Dublin with a special down train of empties for Moate. I had last stopped at the Hill of Down by signal, and was detained there 17 minutes to give the preceding goods-train a good clearance ahead. On approaching the Killucan distant-signal I found it at danger, and came to a dead stand at it, seeing the other train standing at the station. As I was looking forward I thought it appeared coming nearer, and on getting down to make sure saw clearly that it was running back. I could not say whether or not the van wheels were skidding; the weather was hazy and wet. I at once got up and tried to set back, and had just got into backward motion (I had on 33 waggons and a van) when the collision occurred. Neither I nor my fireman jumped off. I saw some one jump out of the other train as it was coming towards me. There was no damage done to my train except the engine funnel being knocked off. I think the waggons ran in at a speed not exceeding 10 miles an hour.

This collision was caused by the want of sufficient breaks having been put down in the 3 a.m. goods-train before shunting was commenced, after its arrival at Killucan. There appears no reason to believe that the push given to the train by the engine when being uncoupled was by any means a severe one, and although the loaded part of the train was standing on the falling gradient of 1 in 120, it ought not, had sufficient breaks in the loaded waggons been pinned down, to have run back. It is of course possible that the van breaks may have been tampered with by the herdsman, who was alone in the van when the train began to run back. It is not desirable on this account, as well as for other reasons, that drovers and others should be allowed to travel in break-vans, and Clause 8, Section D., of the Board of Trade requirements, recommends that, "When drovers or "other persons are permitted to travel with goods "or cattle trains, suitable vehicles should be pro-"vided for their accommodation near the front of the "train."

Had there been a runaway siding on the down line, about half way between the Killucan home and down distant signals, the collision would have been prevented.

It is, I understand, the Company's intention now to put one in forthwith.

I have, &c.,
C. S. Hutchinson,
Colonel, R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 7th November.

MIDLAND RAILWAY.

Board of Trade,
(Railway Department,)
Whitehall, 22nd August 1876.

Sir,

In compliance with the instructions contained in the order of the 15th inst., I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 15th inst., near Ormside station, on the Settle and Carlisle section of the Midland Railway.

A goods train from Bradford separated into two parts while descending the incline between Kirkby Stephen and Crosby Garrett, and on the leading portion of the train being stopped at the south side of Ormside station, it was run into by the hind part of the train that had broken loose, 15 waggons were thrown off the rails, some of them fouled the up road, and fell over on the up express train from Carlisle to London, which was passing at the time.

The express left Carlisle at 8.12, four minutes late.

It consisted of an engine and tender, a break-van with a guard in it, a Pullman carriage, three composite carriages, and a break-van at the tail of the train with another guard. The guard in the front van was seriously injured, and two passengers are reported to have been slightly injured.

On the evening of the 14th the goods train started from Bradford for Carlisle at 8.45 p.m., five minutes late. On leaving Skipton, where some shunting work was done, it consisted of an engine and tender, nine loaded, 28 empty waggons, and a break-van at the tail of the train with a guard. As the train passed Crosby Garrett station, which is about 10 miles north of the summit of the railway, the signalman on duty there noticed that the train was divided into two parts about the centre, and he signalled to the man on duty at Ormside station that such was the case. The railway from Ais Gill lie-bye sidings, which are at the summit of the line, falls on gradients of about $\frac{1}{100}$ to Ormside station, which is 15 miles north from Ais Gill. About a $\frac{1}{4}$ of a mile to the north of Ormside station the railway rises towards Appleby. At the time the signalman at Ormside received notice that the down goods train was divided, he also received notice from Appleby that the express from Carlisle to London was approaching. The up and down lines on both side of Ormside station were clear of trains at the time, but the signalman kept both his up and down signals at danger against the coming trains in consequence of the signal he had received that the down goods train had become divided. The up express train was brought to a stand at Ormside signal-box in consequence of the signals being at danger against it. The down goods train had not reached Ormside station at this time, and the signalman informed the driver of the express that the goods train had broken into two parts, and he desired the engine-driver of the express to take his train forward towards Crosby Garrett with caution. The engine-driver of the express consequently proceeded on his journey, and when he had got about 150 yards south of Ormside station, he passed the engine of the down goods train, and immediately afterwards the driver of the express heard the two portions of the goods train come together, and he perceived some waggons thrown off the rails. He passed clear of them on his engine, but the van next to the tender was struck by one of the waggons of the goods train, as it was thrown off the down line of rails; the off side and part of the end of the break-van were torn away, the off side and end of the Pullman car were damaged, and the off side of the three composite carriages next to it, and the rear van were also slightly damaged. The engine-driver of the express stopped his train at once. The engine of the goods train had almost come to a stand in obedience to the Ormside station down signals, which were at danger when the engine of the up express passed it. The night was dark and foggy.

The accident was caused by the mistakes of the signalman on duty at Ormside station. According to the company's regulations, this man should not have kept his signals at danger against the goods train which had broken in two, as it was travelling on a falling incline, and the section in front was clear, but he should have allowed the goods train to pass, giving the driver, at the same time, a signal with his hand-lamp to inform him of the fact that his train was following in two portions. The regulations further directed him to keep the express train at his post until he had ascertained that the down goods train had not in any way interfered with the safety of the up line. This man has been employed as signalman at Ormside since the line opened in August 1875. He was perfectly aware of the regulations, and the only reason he gives for disregarding them is that he lost his presence of mind at the time. He bears a good character.

Eleven waggons of the goods train were broken to pieces and six others were damaged.

Owing to the broken up state of the goods waggons it was impossible to find out the cause of the goods train having separated into two parts.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

F. H. Rich,
Colonel R.E.

Printed copies of the above report were sent to the Company on the 7th September.

MIDLAND RAILWAY.

Sir, *Bedford, 14th September* 1876.

In compliance with the instructions contained in the order of the 9th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with a collision that occurred on the 5th instant, on the Midland Railway at Bedford.

An express goods train, consisting of an engine and tender, 24 waggons, and a break-van with a guard in it, ran into a train of empty waggons, which was being shunted at the station. The guard of the goods train was hurt.

On the day in question, the empty waggon train, which consisted of an engine and tender, 41 waggons, and a break-van, with a guard in charge, was stopped at Bedford station, about 4.5 a.m., as the line was not clear for it to proceed towards Wellingborough, which was its destination. While it was standing at the station, the signalman on duty at Bedford junction received instructions from the south box to shunt the empty waggon train, so as to allow the express goods to pass, and he therefore gave the signal for it to draw ahead over the points, and shunt into the goods yard at the south side of his cabin. While the train was moving back into the siding, the express goods arrived and ran into the fourteenth waggon from the engine. Seven waggons of the empty waggon train, and four or five waggons and the four leading wheels of the engine of the express goods train were thrown off the rails.

Bedford junction is protected by the ordinary home and distant signals, which are interlocked with the points. The locking gear was undergoing repair at at the time of the accident. There is a signalman's cabin, called the south cabin, about 500 yards to the south of Bedford junction, from which distant and home signals are also worked, in unison with the Bedford junction signals. The signals at the south cabin were at danger against the express goods, which approached that cabin at a speed of about 15 miles an hour, and as the engine reached the cabin, the signalman lowered the home signal to allow the train to pass, and draw within it, under protection of the junction signals, which were also at danger against it. As the engine-driver of the express goods passed the south cabin, the signalman on duty noticed that he and the fireman were apparently asleep, and he called to them, but failed to rouse them. Steam was nearly shut off at the time.

The signalman on duty at Bedford junction observed the express goods coming at such a speed that he thought it would not pull up in time to avoid a collision, and he shouted to the driver, and showed a red lamp, but failed to rouse him till he got close to his cabin, and was only a few yards from the train of empty waggons which was being shunted back.

It appears that the engine-driver of the express goods train, when he was spoken to after the accident, admitted that he and his fireman had been napping. This driver came on duty at 4.0 p.m. on Monday afternoon. The accident occurred about 5.0 a.m. on the following day (Tuesday), and his work would have been completed on his reaching Wellingborough station, 15½ miles beyond Bedford. He had been off duty from 4.0 o'clock on Saturday afternoon until 4.0 o'clock on Monday afternoon. He and the fireman have been dismissed from the Company's service, and did not appear before me to give their evidence, although they were called for.

This accident was caused by the neglect of the engine-driver and fireman of the express goods train which was proceeding from London to Wellingborough.

I have, &c.,

F. H. Rich,
Colonel R.E.

The Secretary,
Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Company on the 30th September.

MIDLAND RAILWAY.

Board of Trade,
(*Railway Department,*)
1, *Whitehall, 4th October* 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 27th ultimo. the result of my inquiry into the circumstances connected with the collision which occurred on the 25th ultimo at Whitehall junction, near Leeds, on the Midland Railway.

In this case, the Glasgow portion of the Midland Company's down Scotch express train (10.30 a.m. from London), due to pass Whitehall junction, Leeds, at 3.50 p.m., was run into by a North-eastern Company's goods train, proceeding from Copley Hill to Milford junction.

In the Midland Company's train eight passengers complained of injuries more or less serious. One of the guards and the conductor of the Pulman car were also injured.

In the goods train, the driver was seriously injured.

In the Midland Company's train, the tender had its left side grazed; the left side of the front van was smashed in, and all its wheels knocked off the rails. The composite next it was broken up; the front of the Pullman car next to the composite was injured, and its leading bogie truck forced backward and knocked off the rails.

In the goods-train, the tender (which was before the engine) was slightly damaged, and its trailing wheels knocked off the rails.

Whitehall junction, Leeds, is the western end of a triangle having sides about 360 yards long; Water Lane junction and Leeds junction being its southern and eastern ends. The line from Copley Hill (belonging to the London and North-western Company) joins the Midland Company's main line 14 yards west of Whitehall junction, the distance between this junction and Copley Hill junction being nearly half a mile.

The Midland Company's trains from the north and south, not running into Leeds station, pass through Whitehall and Water Lane junctions, and the North-eastern and London and North-western Company's trains between Copley Hill and Leeds, through Whitehall and Leeds junctions. The home-signals at each end of the triangle are arranged upon the same principles, and at Whitehall junction those referring to trains proceeding from the north and from Copley Hill are placed upon two posts, 36 yards from the fouling-points (and 87 yards from the cabin); the top arms on each post referring to the lines on which the trains are approaching the junction, and the lower arms on each to the directions in which they are to proceed after passing it; thus, a Midland Company's train proceeding from the north to Water Lane junction would have lowered for it the top arm on the left-hand post, and the lower arm on the right-hand post; and a North-eastern Company's train, proceeding from Copley Hill to Leeds, the top arm on the right-hand post and the lower arm on the left-hand post. This method of signalling is perfectly intelligible, and has been in force at this and other similar junctions of the Midland Company for many years; as it is however not in unision with the present method of signalling it is about being altered accordingly.

The line between Copley Hill and Whitehall junction is curved, and falls from Copley Hill on a gradient of 1 in 90. The block system is in force as regards trains following each other, but with present arrangements it is stated to have been found impossible (on account of the very heavy traffic) to apply it so as to prevent two trains which can come into collision approaching the junction at the same time.

The evidence in the case is as follows:—

1. *Charles Hickinson,* in the North-eastern Company's service, driver six months, fireman with contractor Nelson for about 12 months, 5½ years previously fireman with the North-eastern Company: I have been accustomed to work about Leeds both as fireman and driver, and am perfectly well acquainted with the signals at Whitehall junction. I had come from Selby on the day of the collision with the 1.5 p.m. through goods train for Copley Hill, and arrived there about three o'clock, and started back for Milford junction shortly before the collision with a train consisting of tender, engine, 20 loaded waggons of iron, and a guard's van; my fireman was Edward Long, and a North-eastern Company's foreman from Copley Hill goods yard was on the foot-step. I came out from Copley Hill with the siding-signal off, the advanced-signal being against me. I had nearly reached it when it was pulled off. The distant-signal from Whitehall junction (which I have never yet seen off) was against me. I was perfectly aware when I drew past the advanced-signal that I might have to stop at Whitehall junction; as I came round the curve towards the junction, the left-hand bottom signal was off. I could not see the top arm of the right post, but the top arm of the left posts not being off at the time, I concluded that the top arm on the right post was off. On seeing the left-hand bottom arm off I turned round and put my arm down to give the boiler water, having previously told the fireman to slack the break, and on turning round again the signals were all full against me, and all four at danger. At this time I might have been about 100 yards from the fouling-point. I had put a little steam on when I told the fireman to slack the break but shut it off at once, reversed my engine, re-applied steam, and gave the break-whistle, the tender-break being applied at the same time. I was at almost a dead stand when I struck the other train with the left buffer of the tender. Another half yard would have saved the collision. I was knocked off and ruptured, and was in hospital for a week, but am now getting better; the fireman and foreman both jumped off. It was when I turned round after giving the engine water that I saw the signals at danger, and on turning round again, after reversing, I saw the signals off for a Midland Company's train to the south. I was guided by the position of the low arm, thinking that as it was right the top one was also sure

to be right for me. The foreman said "Right" to me before the break was eased; the fireman had only been twice on the road, there was no one else about at the time.

2. *Edward Long*, fireman in the North-eastern Company's service one year: I had only been once before the collision from Copley Hill towards Leeds. and was not acquainted with the Whitehall junction-signals. All the Whitehall junction-signals were at danger as we came round the curve, but I then saw the left-hand top and the right-hand bottom signal lowered, and on this the driver told me to ease my break. I am quite sure of this, and that I never saw the left-hand bottom signal lowered. I heard the foreman who was on the foot-plate say, "I think it is right," before the driver told me to ease my break. After a few yards my driver said, "We are wrong." I got my break on and then looked ahead, and saw the points were wrong, and saw the down train coming, and then seeing I could do no more jumped into the 4-ft. space, our speed not being so fast as I could walk—the foreman jumped before me. There was no break on the engine, only on the tender. The driver remained on the engine. I never heard the driver at the time say that the left-hand lower signal was off, but he said so afterwards.

3. *Henry Turner*, goods guard, 10 years in the North-eastern Company's service: I reached Copley Hill from Selby at 3.40 p.m., having been due at 2.35, and started back from Copley Hill for Milford junction at 3.55 p.m., with a load of 20 loaded iron waggons and a van. We were due away at 3.20 p.m. I was alone in the van. There is a turntable at Copley Hill, but it is not the practice to turn North-eastern engines there, but at Neville Hill near Marsh Lane. The advanced-signal from Copley Hill was off for us, and when I came in sight of the Whitehall junction-signals I saw the top left-hand and the bottom right-hand ones off, and I knew they were not the signals for us, but for a Midland train from the north. I had my break hard on and four wheels skidding on leaving Copley Hill, on account of the gradient, and could do no more when I saw the signals against us, though I thought the driver was going too fast. I never heard him touch his whistle. I think he must have discovered his mistake just by the home-signals, when I saw the tender-break applied again. I could see the signals off for the Midland train when I saw the break eased. The train was nearly stopped when the collision occurred. I was then in my van. The engine-buffers mounted the buffers of the first waggon.

4. *John Ellis*, goods foreman, five years at Copley Hill, in the North-eastern Company's service; previously goods guard in the Leeds section about a year: I know the Whitehall junction-signals. I rode down on the foot-step and then on the foot plate of the engine of the goods train. When I noticed the Whitehall junction-signals first, they were all at danger, and after I had jumped off, about 100 yards from the home-signals, I saw that they were lowered for a Midland train from the north. I jumped off because I had come as far as I wanted. The driver had his break eased before I jumped off, and I concluded the signals were off for him. Then when I was down on the ground and saw the signals off I saw him reversing. I remember the driver saying either to me or the fireman, "Is it] right," or words to that effect, and without meaning to say that the signals were right, I said, "I think so," not taking any particular notice, and imagining that as an old fireman he must know the signals. I was not conversing with the driver.

5. *Alfred Pinder*, driver 13 years in the Midland Company's service: I joined the up Scotch express train from Glasgow at Skipton, and left it at the right time, viz., 3.23. On approaching Whitehall junction, I found the Wortley junction-signal off, a quarter of a mile from Whitehall, but as I was approaching the Wortley junction it was put on, and I saw the Holbeck junction station-master approaching me with his arms up. At this time the top arm on the left post at Whitehall junction was off, but I had not then seen the lower arm on the right post. Having been slacked at Armley, I stopped clear of Wortley junction. I had the Westinghouse air-break on the train, and applied it on seeing the Wortley junction-signal go to danger. I was running about 16 miles an hour, and stopped in less than 150 yards.

6. *Edwin Rogers*, driver 12 years in the Midland Company's service: I joined the Glasgow portion of the down Scotch express train at Normanton, and left it at 3.40 p.m., six minutes late. I had on five vehicles, viz., a break-van, a composite, a Pulman car, a bogie carriage, and a break-van. The Westinghouse air-break under my control was applied to all the wheels of the train except those of the engine. There was no break on the engine. I had clear signals all the way to the engine shed cabin (the next one to Water Lane junction), where the distant-signal was against me; but the home-signal was taken off before I reached it. The distant and home signals at Water Lane were both off, and also the distant and left-hand top and right-hand bottom signals at Whitehall were all off for me when I sighted them. These Whitehall signals were off when I first sighted them from the engine shed box, and remained off till I got right past them. I did not see the North-eastern train till I was close to it, about five yards off. I believe I shut off steam and applied the air-break almost simultaneously. I have run with the break since May and find it acts instantaneously. I use it on all occasions. My speed at the time was 15 to 16 miles an hour. The North-eastern engine struck the trailing end of my engine; it was going very slowly. The tender separated from the front break-van, and we went about 20 yards before stopping. Neither I nor the fireman was injured.

7. *Edward Henry Watkins*, guard 12 years in the Midland Company's service: I joined the Glasgow portion of the down Scotch express at Normanton; I was in the front break-van. We were six minutes late leaving Normanton. I did not notice the Whitehall junction-signals, and the first idea I got of the collision was the shock shortly after passing the home-signals. I did not feel the break go on before the collision, which knocked me down and hurt me in the side. I have been on the sick list for a week. I was standing in the centre of the van; had I been on the seat on the left side I should have been badly injured. The van did not run above three or four yards after being struck. I believe there were only four passengers in the composite. I booked the time of the collision as 3.56 p.m.

8. *Frank Scott*, guard two years with the Glasgow and South-western Company, acting about six months with the through trains: I was in the rear van and had come from London. I was not aware that anything was wrong until the collision happened, just before which the speed had been 15 miles an hour. At first I thought we had made a rapid stop in consequence of the break being applied, and only found there had been a collision on leaving my van. We stopped in a very few yards. I was sitting down, but was not thrown from my seat. I looked at the time, and found it was 3.56.

9. *William Lilley*, signalman 20 years in the Midland Company's service, all the time at Whitehall junction: I came on duty at 2 p.m. on the 25th for an eight hours shift. George Spear was on duty with me at the time, booking trains. We work strict block between Water Lane, Leeds junction, and Copley Hill, and signal block towards Holbeck. We accept trains from all points at the same time, except

those coming from Water Lane, to cross and go back to Leeds junction. I believe I got the "Be ready" for the down Scotch express first, next for the up Scotch express, and then for the Copley Hill train. I lowered the signals first for the down express, which kept the Copley Hill signals locked at danger, and then for the up express. The down express approached first, and when I first saw the Copley Hill train the down-express was close by. I did not at first think the North-eastern train would foul the junction, but had I thought so, I should not have had time to turn the down train on to the Copley Hill line. I had not even time to throw up my signals before the driver was past them. I threw up my signals against the up express. The up line was fouled by the collision, which occurred at about 3.54. From my experience I should say that the traffic could not be worked if we were to keep trains standing at Copley Hill while the signals were off for trains passing the junction. About 320 trains pass Whitehall junction in the 24 hours.

10. *George Spear*, seven months train recorder, in training for pointsman, in the Midland Company's service: I went on duty at 7 a.m. for a 12 hours shift. The "Be ready" signal for the North-eastern train was received at 3.52, for the down Scotch express at 3.53, and for the up express at 3.54. Lilley took these signals and I booked them. I was then taking a message, and do not remember the North-eastern train being taken "on line," and I did not book it, but I booked the down express as passing at 3.54. I am confident the signals were never taken off for the North-eastern train, but first for the down express. I do not remember Lilley saying anything before the collision took place. I thought the North-eastern train would come too far, but at this time the down Scotch train was close to the cabin.

The breaks of the rear bogie of the Pullman car were observed to be still on after the collision. The break-van did not recoil.

This collision was caused by the driver of the North-eastern Company's goods train mistaking the meanings of the signals which he saw lowered at Whitehall junction, and it is to be regretted that he did not frankly acknowledge this instead of trying to make it out that the signals had been reversed while he was approaching them; it is perfectly clear from the statement of his own fireman, from that of the goods foreman on his engine, and from that of the guard of the goods-train, as well as from the interlocking of the signals in the cabin, that the signals for the Midland Company's up express train were the only ones lowered on the two posts with which he was concerned. As to his statement that he was guided by seeing the lower arm on the left post lowered, and that he consequently assumed that the top arm on the right post must also be lowered, it was simply condemning himself, for the all-important signal for him was the top arm on the right-hand post, and of this he acknowledges he did not see the actual position when he had his break eased, though it is really visible almost simultaneously with the lower arm on the left-hand post. It is also evident from his remark to the goods foreman that he was in doubt about the meaning of the signals.

The goods foreman was very imprudent in replying "I think so"—or words to that effect—on the driver asking him whether the signals were right, when he had taken no particular notice of their position. He no doubt, by his answer, helped to mislead the driver.

The present system of working the traffic from Copley Hill to Whitehall junction is attended with constant danger. With the best intentions, a driver with a heavy goods train behind him on a descending gradient of 1 in 90 is very likely, under adverse circumstances, to foul the junction. The simplest remedy would be, of course, to permit no train to leave the top of the incline while any train with which it could come into collision was approaching Whitehall junction; but this, with existing arrangements, is said to be impracticable, on account of the enormous traffic. The alternative course seems to be to provide an additional line of rails for goods trains from Copley Hill to near Whitehall junction with a blind siding at its lower end; goods trains might thus be brought up close to the junction, while they would be at the same time prevented fouling it, except by direct permission of the signalman.

The air-breaks with which the two express trains were fitted did good service on this occasion; that on the up train enabled it to be stopped (upon the signals being thrown to danger) within a safe distance of the junction; and that on the down train prevented the two rear vehicles from running in upon the front of the train.

Had the *engine* of the goods train been provided with a break, the driver might very likely have been enabled to have stopped before fouling the junction.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the Midland and the North-Eastern Railway Companies on the 3rd November.

NORTH BRITISH RAILWAY.

Board of Trade,
(Railway Department,)
28th October 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 2nd instant, the result of my inquiry into the circumstances connected with the collision which occurred on the 28th ultimo, near the Waverley station, Edinburgh, on the North British Railway.

In this case, the 10 a.m. down passenger train from York (5.15 a.m. from London) due at Edinburgh at 3.30 p.m. ran into the 3 p.m. passenger train from Musselburgh, due at Edinburgh at 3.23 p.m., at a point 77 yards inside the Calton tunnel cabin down home-signal, which was at danger against the York train.

Nineteen passengers were injured, the most serious case being one of concussion to a passenger in the York train.

The damage to rolling stock was slight.

Calton tunnel cabin is situated 143 yards west of Calton tunnel, and about a quarter a of a mile east of the stopping place for main line down trains at Waverley station. The tunnel is 400 yards long, and is situated on a gradient of 1 in 78, rising towards Waverley station. The down home main line signal is placed 80 yards west of the tunnel mouth, at the junction of a gasworks siding; there is also a down distant-signal at the east end of the tunnel, rarely, if ever, lowered, as the line west of the cabin is said to be rarely, if ever, clear. The traffic is worked on the absolute block system from Calton tunnel cabin eastward, but permission for trains to enter the station is obtained by

hand-signal from a pointsman in the station yard, there being no fixed signals for down trains west of Calton tunnel cabin.

The next block station is Abbey Hill cabin, half a mile east of Calton tunnel cabin.

The practice of the Calton tunnel cabin signalman is not to give "line clear" for a down train until its tail has passed his cabin.

The following rule, dated 28th August 1873, bears on the present case:—

"Drivers of down trains and engines passing "through Calton tunnel are hereby specially enjoined "to have the speed reduced to such rate, so that, on "emerging from the tunnel at west end they will be "able to stop short of the new two-armed down home-"signal, whatever signal may be exhibited on the "said signal post."

The following is the evidence relating to the collision:—

1. *James Young*, signalman about four years in the North British Company's service, 16 months at the Calton tunnel cabin: "I came on duty at 2 p.m. for "eight hours. We work block system eastward "between my cabin and Abbey Hill, but not westward "towards the station. We do not give 'line clear' to "Abbey Hill till the tail of a train, whether stopped "or running, is clear of the signal-cabin. On getting "the passing bell from Abbey Hill, if for a passenger "train, I wave a white flag to a ground pointsman in "the station yard, and if he is clear he gives me a "white flag, and I lower my home-signal, but if I "get no reply or a red flag I bring trains past the "signal with a green flag, and they draw up as far "as they can. The down distant-signal is never "used, as trains will be past it before I know whether "or not the road is clear. On the 28th September I "got the Musselburgh train 'on line' at 3.28 p.m., "but got no signal at all for it to enter the station, "and I consequently brought the train on with a "green flag, past the home-signal and past the box, "till it stood with its van 14 yards on the station "side of the cabin. It passed me at 3.31 and I "cleared it at the same time to Abbey Hill and got "back at once the 'on line' signal for the 2 p.m. "express train from Berwick at 3.31, and soon after "the passing bell for this train; this train had "almost reached the home-signal before I came out "of the cabin, where I was engaged with the instru-"ments; the driver should have stopped at the home-"signal not getting any hand-signal from me, but "instead of this he came on past the cabin slowly, "and struck the van of the Musselburgh train, which "was still at rest. The collision occurred at 3.35 p.m. "The day was close. I think the engine of the "express train was reversed, but I don't think any "steam was coming out of the funnel. I cannot "speak as to any of the breaks being on or off. I "heard no break-whistle given. I got no signal for "the express train before the 'on line' signal. I don't "remember whether this train is often stopped by the "Musselburgh train. The normal condition of the "down distant-signal is danger. The rule as to the "double-armed home-signal post is dated August "1873. The trains are stopped clear of the crossing "into the platform. If a train is so long that its "tail remains on the Abbey Hill side of the signal-"cabin 'line clear' is not given back to Abbey Hill. "Drivers do not pass my down home-signal unless "waved past."

2. *James Fulton*, signalman four years in the North British Company's service, 2½ years in the Abbey Hill cabin: "I came on duty at 2 p.m. for eight "hours. I work strict block in three directions. My "next station, east on the main line, is St. Margaret's. "I received the Musselburgh train 'on line' at 3.22; "it arrived at 3.25. Line was not clear when it "arrived, but I received 'line clear' at 3.29. I at "once gave on the Musselburgh train which was "standing at the advance-signal, and got clear for "it at 3.32. At 3.29 I got train 'on line' for the "express train. I had given 'line clear' at 3.25 for "the Musselburgh train on its drawing up to the "advance-signal. The express train arrived and "passed at 3.34, and I was able to give it clear sig-"nals, having received 'line clear' for the Mussel-"burgh train two minutes sooner. It did not strike "me that there was anything unusual in the speed of "the express train—perhaps between 20 and 25 "miles an hour. Steam was on, and I don't think "any breaks were applied. I received 'line clear' "back at 3.45."

3. *John McLean*, pointsman in the North British Company's service 27 years, all the time at the East end pointsman's cabin in Waverley station yard: "I "have charge of no signals, but admit the trains by "hand-signals, and turn them through the points to "the platforms to which they have to go. I remember "the Musselburgh train arriving on the 28th ultimo. "It drew up within 50 yards of the tail of a goods "train. The Musselburgh train had two engines on "it, and I could not turn the leading engine (which "was going to take out a Granton train), into a "siding, because the goods train was in the way and "could not get on as another goods train was in "front of it. I should have had a clear road for the "Musselburgh train in about five minutes. I heard, "but did not see, the collision."

4. *Philip Dodds*, spare passenger guard in the North British Company's service for four years: "I was in "charge of the train due to leave Musselburgh at "3 p.m., and left at proper time. The train consisted "of eight vehicles, including two vans, one front and "one rear. I was the only guard riding in the rear "van. There were no other breaks but the van "breaks. We stopped at New Hailes, and left at "right time; then at Joppa, leaving at right time; "at Portobello the train was detained by signal three "minutes; and four minutes at St. Margaret's by signal, "where the engine was attached. We were stopped "not on account of the engine being attached, but by "the line being blocked, of which advantage was "taken to attach the engine. At Abbey Hill we "were stopped another three minutes; at Calton "tunnel cabin we came pretty fast, and stopped a "short distance past the cabin at 3.32. We had been "standing three or four minutes when, with hardly "any warning, the express train ran into us. I had "no time to jump out, and I was knocked down by "the collision. My head was a little hurt, but I have "not had to leave duty. My break was not on. We "were knocked forward about two carriage lengths."

5. *Richard Roberts*, driver six years with the North British Company: "I joined the Musselburgh train at "St. Margaret's. I was to take out the 4 o'clock Gran-"ton train. We were drawn forward from the Calton "tunnel home-signal by flag from the signalman. "Without a flag I should still pass the home-signal, "and draw cautiously forward as far as the cross-over "road, and remain there till receiving permission from "the pointsman. We never stop dead at this signal, "but always draw cautiously past it, or else the tail of "the train would be left in the tunnel. On the "present occasion we drew forward as near as we "could to the goods train, so as to be safe against its "setting back. We were standing perfectly still when "the collision occurred. My engine was uncoupled, and "it was driven forward five or six yards. As a rule, "I have never passed the Calton tunnel home-signal "without a hand-signal."

6. *Edward Wann*, driver 19 years in the North-eastern Company's service: "I joined the 10 a.m. "down passenger train from York at Newcastle, and "left it four minutes late. My engine was a four-"coupled one with 7 feet coupled wheels, 17 in. × 24 in. "cylinders. The coupled wheels had each one break "block, and the tender six break blocks. From Ber-

" wick the train consisted of 12 vehicles, with three " guards. I have often worked trains into Edinburgh. " After leaving Berwick we were slacked at Cockburn's " Path by repairs to road, and left Dunbar nine " minutes late. No detention occurred after leaving " Dunbar. We got clear signals at Abbey Hill cabin, " where the distant, home, and advance signals were " all off, but I was coming on prepared to stop if " necessary at the Calton tunnel cabin. My speed on " passing Abbey Hill cabin might be 15 miles an hour. " I shut off steam about half-way through the tunnel, " and as the steam was blown forward faster than I " was going, it prevented my seeing the Calton cabin " signal till I was close to it, and then I saw it was at " danger." My speed was at this time eight miles " an hour. I could not see anything of the signalman " on account of the steam, but I considered I was " justified in drawing on cautiously past the signal if " I did not see the signalman. On this occasion I had " intended to stop at any necessary moment, in " perhaps 8 or 10 yards. I first saw the Musselburgh " train when the engine was passing the home-signal. " I reversed the engine and gave it steam. I then " applied the engine-break, and my mate applied the " tender break, when I reversed the engine. I had no " time to whistle for the guards breaks. Owing to the " greasy state of the rails the breaks, &c. did not take " much effect, though I opened the sand-pipes after " putting on back steam, and I struck the van at a " speed of about three miles an hour. We both remained " on the engine, which did not leave the rails. We were " not hurt, and the engine was not damaged. I have " passed the Calton tunnel home-signal without being " flagged past it, but I cannot say how often. There " is no instruction to this effect, but it has been " the practice to draw past it, and as far up as " possible."

7. *William Stephenson*, fireman three years with the North-eastern Company: "I am in the habit of " working in and out of Edinburgh with express " trains. The Abbey Hill signals were clear for us on " the day in question. Our speed on entering the " Calton tunnel was 8 or 10 miles an hour; steam " was shut off in the middle of the tunnel. On " this occasion we could not see the home-signal till " we got to the west end of the tunnel, as the latter " was full of steam and smoke, both from our own " engine and that of another one which we met in the " tunnel. We were alone on the engine. I put on " my break after getting through the tunnel and seeing " the other train, and the driver reversed, put on " steam and applied his own break, having also opened " the sand-boxes. I did not see the signal or the " pointsman. We should have run perhaps another " engine length if we had not struck the Musselburgh " train. I never remember having been past this " home-signal before without being waved first, nor " have I ever been stopped at it. I was not hurt."

8. *Thomas A. Wilson*, guard 25 years with the North-eastern Company: "I joined the 10 a.m. train " at York. We left Newcastle at 12.14, four minutes " late, and Berwick at 2.3, three minutes late, with a " train consisting of nine coaches and three vans, with " two guards. I was in the front van, next the engine " from Newcastle. We were detained by permanent-" way repairs five minutes and two minutes extra at " Dunbar, which we left 10 minutes late. There was " no further check. Our speed on entering the " Calton tunnel would be 10 or 12 miles an hour; " the tunnel was full of steam and I did not see the " home-signal till I was through the tunnel; before " this, close to the west end of the tunnel, I had put " my break on in consequence of seeing the driver " put on his. I then looked out of the window, and " the collision occurred directly after, while my head " was still out of the window; the speed on striking " was perhaps five miles an hour. I was not hurt. " The train was full. I don't know of any case in " which a driver has drawn past the home-signal " without the signalman's permission. The collision " occurred at 3.36."

9. *Joseph Gibson*, guard five years in the North-eastern Company's service: "I joined the 10 a.m. " train from York at Newcastle, and was travelling in " the rear van. There were no continuous breaks on " the train. We had a clear run from Dunbar, and " entered the Calton tunnel at a speed of about " 10 miles an hour. I was not aware of anything " being in the way till the collision occurred. My " break was not on at the time. I was not knocked " down, nor was I hurt. The speed on collision was " four or five miles an hour. I could not see the " home-signal on account of smoke and steam coming " out of the tunnel. I have not travelled in the front of " the train for the last two years."

This collision was caused by want of due caution on the part of the driver of the express train (a North-eastern Company's servant, of 19 years service as driver, during which time he has had no misconduct recorded against him), in approaching the down home-signal at Calton tunnel cabin. This signal, which was at danger against him, he ought to have stopped at, as specially enjoined by the rule issued August 28th, 1873, and quoted above, instead of which he passed it 77 yards inside it, and came into collision, with considerable force, with the van of the Musselburgh train.

There is no question but that this signal is a very bad one to be seen, placed as it is only 80 yards west of the mouth of Calton Hill tunnel, but still the rising gradient of 1 in 78 is greatly in favour of the driver, and in this case he had a powerful engine-break under his control, in addition to the ordinary tender-break. Had he had the control of continuous breaks he would doubtless have been able to stop before striking the other train.

There is at present great want of accommodation at the east end of Waverley station, and it is greatly to be desired that the projected improvements should be pushed on more rapidly.

When these are completed no train ought to be allowed to leave Abbey Hill down advance-signal until the line is clear for it to run into its platform at Waverley. The recurrence of such collisions as the present would then be avoided.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the North British and the North-Eastern Railway Companies on the 28th November.

NORTH-EASTERN RAILWAY.

Board of Trade,
(Railway Department),
24th October 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 3rd instant, the result of my inquiry into the circumstances connected with the collision which occurred on the 28th ultimo, at York station, on the North-Eastern Railway.

In this case, as the Scarboro' mail train, due to leave

York at 4.20 a.m., was running out of the station, it came into collision with some empty carriages which were being backed into the station to be formed into an excursion train.

Four passengers have complained of injury, but none of the cases are believed to be serious.

One of the guards with the empty train was slightly injured.

In the mail train the buffer-plank of the engine was broken; and in the train of empty carriages the van next the tender mounted and made a hole in the tank, and three carriages and two vans were also damaged.

Trains proceeding from the North junction cabin into York station can do so either on the main line or the Scarboro' line, at the discretion of the signalman. These lines run on opposite sides of the ticket platform, at the station end of which there is a double-armed signal post worked from the station cabin, the upper arm applying to incoming trains on the main line and the lower one to those on the Scarboro' line. Close to this signal there are, on the incoming Scarboro' line, facing-points leading to the outgoing Scarboro' line, which points lie open for the latter. There is an intermediate cabin, called "South View," 200 yards from the north junction cabin, one of the duties of the signalman being to signal incoming and outgoing Scarboro' trains and to prevent them from coming into collision at points near the north cabin. There is telegraphic bell communication between the north cabin and South View and the north cabin and the station cabin, but there is no recognised signal by which the north cabin signalman informs the station signalman as to whether a train is approaching him on the main line or on the Scarboro' line.

The evidence is as follows:—

1. *John Jackson*, driver four years.—I was piloting the 4.20 a.m. mail train to Scarboro', as far as the Scarboro' points. I was running engine first. There was no break on the engine. Fireman Wilkinson and shunter Carter were with me on the engine; the latter was justified in being there, as we were going to bring in an empty train after leaving the Scarboro' train. We started about three minutes late. I got the starting signal worked from the Archway cabin lowered, but I cannot say whether the South View cabin signal was lowered, as I could not see it when the collision occurred. When I got about 40 yards, or better, through the Archway, I saw the empty carriages coming along the road I was travelling. I saw no tail lights upon the train. I saw them first myself. I had time to shut off steam, reverse, and get steam against the engine, but I don't think the tender break had been applied, when I struck the empty train. It was in motion at 6 or 7 miles an hour, my speed being 5 or 6 miles an hour. I had no time to give the alarm whistle. Neither of us jumped off. My engine got its buffer beam damaged, but there was no other damage to my train.

2. *John Wilkinson*, fireman about 15 months.—Jackson was the first to see the empty carriages. I had no time to put my break on, having been on the other side of the engine. We had no time to jump off. I saw no lights on the empty train. I saw the starting signal lowered before we started.

3. *Mark Monk*, guard 15 years.—The Scarboro' mail train consisted of seven vehicles, including three break vans. I was the only guard riding in the van next the pilot engine, which would be the last van after passing through the Scarboro' points. We started half a minute late with the starting signal lowered. I was busy sorting parcels, and was knocked down by the collision which took me unawares. I was not hurt sufficiently to have to leave my duty. There were about 12 passengers in the train, and four of these complained of injuries. A cut eye appeared to be the worst case.

4. *Thomas Smith*, driver three years.—I was attached to the train of empty carriages in the permanent way sidings about 4.15 a.m. on the 28th ult. It was ready for me to draw out. There were 14 carriages and 2 vans. Fireman Holmes was alone on the engine with me. I drew out along the incoming Scarboro' line past the north junction cabin, saying to the signalman (Forbes), who was looking out of the window at me, "Station," by which I had always understood the main line was meant, whereas if to come straight back we should say "Scarboro' line." The signalman made no reply, but he stopped me when there were two or three of the last carriages still on the station side of the cabin, and then waved me back with his lamp. I saw him as I repassed the cabin, but he said nothing to me nor I to him. The two guards were each in their breaks, one at each end of the train, at this time, and I had got no signals from them. I was looking out for the signals at each end of the ticket platform; the two worked from the locomotive cabin were both off, but those worked from the Archway were both on, and being occupied in looking for these signals, I did not notice that I was not turned on to the main line, but fancied I was running on it. I had just stopped the far end of the train at the ticket platform signal worked from the Archway cabin when, in answer to a double whistle I had given, the top arm was lowered, and I started again, and did not find out I was on the wrong line till the collision occurred, at which time the engine had not passed through the points at the station end of the ticket platform. I had only whistled once for the ticket platform signal. My speed was five or six miles an hour on striking; steam was on. I did not feel much of the blow on the engine, which was facing north, but the van mounted the tender buffers and knocked a hole in the tank. I have not spoken to the signalman about the collision since it occurred.

5. *Thomas Holmes*, fireman six years.—I was alone on the engine with driver Smith on the morning of the collision. After being attached to the empty carriages we drew straight out of the permanent way sidings past the north junction cabin, where Smith shouted to the signalman "Station:" the signalman was near the window which was open. Under these circumstances we should have been turned on to the main line, unless told to the contrary. The signalman said nothing that I heard. He stopped us with a red light when I think the whole train had passed beyond the cabin. We were then called back, I don't know by whom, and we set back almost directly, and I thought we were on the main line. When we started back, the main line ticket platform back signal was off, and we stopped at the station end of the ticket platform, where the main line signal was lowered almost directly after the driver whistled for it. The collision took us unawares, still thinking we were on the main line. I was not hurt. We had no communication with the north junction signalman as we came back towards the station. Our speed on collision was six miles an hour. Steam had been shut off just before the collision.

6. *Alfred Matthews*, assistant passenger guard six years.—I was to have charge of the excursion train from Doncaster to Scarboro'. I rode in the van nearest the station when the engine drew the empty vehicles (16 in all) out of the sidings. There was an assistant guard in the van next the engine. The engine drew out without check until the last van, in which I was, was about four or five yards outside the main line points. I called out from the van to the signalman in the north junction cabin, "Station." He said "Which road do you want to be on," and I said, "Either, but we want to be in the station." He replied "Scarboro' line." It was an understood thing between the signalmen and drivers that "Station" meant "Main line," and I don't know why the signalman asked me in this case as to the line. We

then backed down the Scarboro' line on the incoming road, and stopped with my van about two yards short of the station end of the ticket platform. I did not notice which of the back signals at the ticket signals was off as I passed them; after about a minute the empty engine which was to take the 4.20 a.m. Scarboro' train passed along the Scarboro' outgoing line, and its steam hung about the ticket-platform signals, the morning also being misty. I got out of my van, which had a red tail light on, and was going to tell the Archway cabin man which line we were on, when a signal dropped and the train began setting back. I jumped into my van and shut my door, and then found out it was the main line signal which was off, and before I could draw the driver's attention, the collision had occurred. Our speed was about 5 miles an hour. I was knocked down, and backwards and forwards in the van. My head and shoulder were hurt. I was off duty for half a day. Both vans and three carriages were damaged, one slightly. The assistant guard said he saw we were on the Scarboro' incoming line, but he did not see the signal fall before the collision. We were due away at 4.30. and were going into the station for roof lamps. I was in my van when we passed the back signal at the ticket platform, and don't know what light it was shewing. I heard my driver whistle "two," *i.e.*, for the main line signal, but this did not strike me particularly at the time. The whistle for the Scarboro' line was "one." I thought the driver knew which road we were on.

7. *Robert Whitton*, porter at York station 2½ years. I have acted several times as assistant-guard, and was going in this capacity with the excursion train. I was in the van next the engine. The driver in passing the north junction cabin said "Station," which, as a rule, means that we should have been turned on to the main line. I did not hear the signalman reply. We were stopped by the red light from the signalman, and he set us back with a white light. I was very near the far end of the ticket platform before I noticed that we were not going back on the main line but on the incoming Scarboro' line. I did not notice which back signal was dropped at the ticket platform. I heard my driver whistle for the ticket platform signal after stopping; but I cannot say whether he gave one or two whistles, and I could not distinguish which signal fell, as the steam of the Scarboro' train engine, as well as that of our own, prevented my doing this, and I did not feel anything was wrong till after the collision had taken place. I was knocked down in the van; I was shaken; but had not to go off duty. My van mounted the tender end and was damaged. I should think the whole train would have been past the north junction signal cabin from the position of my van when we stopped before setting back.

8. *Adam Forbes*, signalman four years with the North-eastern Company, previously signalman three or four years with the North British Company.—I came on duty at 10 p.m. on the 27th ultimo for an eight hours shift. Assistant signalman Varey was with me in the cabin to assist generally. We communicate by telegraph with South View cabin and station cabin, but not with locomotive cabin. We have no signals of our own to stop approaching trains on the Scarboro' line while anything is being backed along it, but depend for protection upon the signals worked from South View cabin. We strictly act up to the instructions in force between our cabin and South View cabin, and we never send anything along the incoming Scarboro' line until we have obtained permission from the South View signalman to do so. In communicating with the station cabin, we do not state whether a train is going in on the Scarboro' or main line. I gave permission to the South View cabin to allow the empty train to draw out of the sidings, for which I did not require to set any points. The driver never spoke, that I heard, as he passed, but he *smiled*, and I *smiled*. The driver stopped without any signal from me before the tail of the train was over the main line points. I then asked the rear guard what road he wanted, and had to shout two or three times before I got an answer, and then it was "Scarboro' line." Of this I am certain. I said, all right, "Scarboro' line." I then told Varey to give the driver a hand-signal to set back, I, meantime, opening the Scarboro' line points. After getting the guard's reply, I gave the bells to South View cabin, and got them repeated, and the disc turned to "line clear" (Forbes hesitated in stating this); this was just before the train set back. Nothing passed between me and the driver or front guard as the train set back. I knew that there was an outgoing train in about five minutes (4.15 a.m. at this time), but I was justified in depending on the South View man for protecting this train. The back signals* worked by the locomotive man were both off at this time. I did not hear the driver of the empty train whistle for the ticket platform signal; I noticed that he had pulled up a bit as he was passing the South View cabin. I did not know there had been a collision till the driver of the mail came up to the cabin.

9. *Edward Varey*, assistant signalman 15 months, all the time at the north junction.—I came on duty at 6 p.m. on the 27th for 12 hours. I remember the train of empties passing the cabin. I never heard the driver speak as he passed the cabin, nor the fireman, nor the front guard. I think the rear van would be a carriage length from the cabin, when it stopped. I stopped the train with a red light when I thought the tail of it had got over the main line points. I heard the signalman ask the rear guard once or twice which road he wanted, but I did not hear the reply. The signalman sent the train back on the Scarboro' line; as I saw him set these points I waved the driver back. I did not see the signalman do anything between his moving the Scarboro' line points and my waving the driver back. There was no communication with South View before the train set back, it not being the custom in cases where the train has already come from South View cabin for the purpose of setting back along the Scarboro' line. The time was about 4.15 a.m.

10. *William Beal*, signalman 12 months, about six months at South View.—I came on duty at 6 p.m. for 12 hours. I remember the empty train leaving the permanent way sidings; I had got permission for it to leave from the north junction cabin, but I did not know which road it was coming back on till I heard some one shout "Scarboro' line," and saw it come down the Scarboro' line. No permission had been asked for this, nor is it customary in such cases. I have no communication with the station cabin, but have to listen for the train whistles, and then ring to the north junction. The Scarboro' train had not whistled out at this time, *i.e.*, when the empty train was on the incoming Scarboro' line, nor did I hear it at all. The empty train stood for two or three minutes at the ticket platform, and then the main line board fell, but I did not know whether there was anything on the other side of the ticket platform to require that signal. I did not see the collision take place; I was attending to the light engine which was to take the Scarboro' train away.

11. *William Hudson*, 25 years signalman, all the time in the station cabin.—I came on duty at 10 p.m. for an eight hours shift. I believe the outgoing Scarboro' train whistled first at about right time. I had before this received notice from the north junction about the empty train, but there is no special signal to inform me as to which line a train is coming on. The engine of the empty train gave two whistles for the ticket platform signal. I saw the tail light of the train, but could not tell which line it was on. I lowered the main line signal, and it started at once, and I then saw the trains would come together, but could

* These signals are only used for protecting trains when stopped at the ticket platform.

do nothing to prevent it. Had I known the empty train was standing on the Scarboro' line I should not, of course, have lowered either signal.

This collision occurred in consequence of a misunderstanding between the driver of the train of empty carriages and the signalman in the north junction cabin as to the line on which the empty train should be set back into the station. The driver, fireman, and front guard all positively assert that "station" (meaning "main line") was asked for, while the signalman and assistant signalman declare that nothing of the kind was said. As, however, the signalman (Forbes) did not, I fear, speak the truth as to his having obtained permission from the South View signalman before permitting the empty train to proceed towards him, his testimony as to what passed between him and the driver is hardly to be relied on. In consequence of this misunderstanding, the driver proceeded along the Scarboro' line, thinking all the while he was on the main line, stopped with the tail of his train at the ticket platform signal, and, then on the main line signal being lowered, again went on, pushing his train through the crossing leading to the outgoing Scarboro' line, and meeting the mail train coming along that line.

As the alterations at the York station are now fast approaching completion, it is needless to recommend any important changes in the arrangements and mode of working under which this collision occurred, and which will soon be things of the past. It would, however, be easy and desirable at once to establish a code of signals between the north junction and station signalmen, so that the latter may be informed on which line a train is approaching him. Had such a code existed prior to the collision, it is very possible it would have been prevented, as the station signalman would then have known on which line the empty train was really running, and would not have lowered either ticket platform signal until the outgoing train had passed.

I have, &c.,
C. S. HUTCHINSON,
Colonel R.E.

The Secretary,
(Railway Department),
Board of Trade.

Printed copies of the above report were sent to the Company on the 28th November.

NORTH STAFFORDSHIRE RAILWAY.

Board of Trade,
(Railway Department,)
Whitehall, 2nd September 1876.

SIR,

IN compliance with the instructions contained in the Order of the 22nd ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 17th August at Crewe sidings, on the North Staffordshire Railway.

The 6.35 p.m. North Staffordshire passenger train from Derby to Crewe ran into a goods train which was being shunted at Crewe sidings by an engine belonging to the London and North-western Company. These sidings, which belong to the North Staffordshire Railway Company, are about half a mile to the east of Crewe station.

The guard of the passenger train had one rib broken and his cheek bone was bruised, and five passengers are reported to have been slightly hurt.

On the day in question the passenger train left Derby 13 minutes late. It consisted of an engine and tender, a third-class, a composite, two third-class carriages, the break-van with the guard in charge, and two other composites. The vehicles were coupled together in the order they are given. This train left Alsagar (which was the last place it stopped at previous to Crewe) 5 minutes late, and arrived at the Crewe goods sidings about 8.47 p.m. As it approached Crewe sidings the engine-driver found the distant-signal which protects these sidings at danger, and he drew his train quietly past it, intending to pull up inside the distant-signal, but he then observed, as he thought, that the home-signal at Crewe sidings junction was at "all right," showing a white light; he therefore gave his engine a little steam, and proceeded at about 6 or 7 miles an hour towards the junction signal-cabin. As he got close to it, he perceived that the home-signal was showing white, with, what he calls, a red rim on one side, and he noticed three men on the ground waving white hand-lamps, which he thought were intended to call him on, so he proceeded forward at a speed of about six miles an hour, and did not become aware that there was anything in his road till his engine struck a waggon of the goods train, which was the seventh from the goods engine. The two front wheels of the passenger engine were thrown off the rails, the buffer-plank was broken, the cover of the steam chest was cracked, and the piston rods were bent, but no injury was done to the passenger carriages.

The goods train arrived from Stoke at Crewe sidings at 8.20 p.m. As these sidings were nearly full, a London and North-western train had to be taken out to make room for the North Staffordshire goods train, which consisted of an engine and tender, 38 waggons, and a break-van. Portions of this goods train were put into two sidings, and the rest, which consisted of 15 waggons and the engine, was being pushed back into the third siding at the time that it was run into by the passenger train. Three goods waggons were thrown off the rails, and two of them were damaged.

The junction of Crewe sidings with the North Staffordshire down line to Crewe is protected with an ordinary "home" and "distant" signal, which are worked from a raised cabin placed close to the junction, and the signals are interlocked with the points. One lamp, which is provided with two lenses at opposite sides, furnishes the light for the "up" and "down" home junction signals, which are placed on the same post. This lamp fits on to a pin, and falls into an iron socket about half an inch deep. If the lamp is not fairly dropped into the socket, but is set at an angle so as to rest skew-ways on the edge of the socket, the red down-signal becomes obscure, and the up-signal is reflected towards a driver approaching on the down line, and shows a white light. A white light is also shown if the lamp is not wound fully up to its place, or if the lense on the up side, which is held in position by a set-screw, has got shifted. These signals are intended to work only to "danger" and "caution," and the lights shown should be red for "danger" and green for "all right," like ordinary junction signals. At the time of the accident, the up-signal was showing a green light for an up train which was passing at the time, and consequently the lamp must have been wound up to its proper position. If the lense had been shifted, which the signalman on duty attributes the accident to, a reflected white light would have been shown to a driver of a down train, but this reflected light would not have obliterated the real red light of the down-signal, which the evidence shows that it did in a great measure. According to some of the evidence, the down "home"-signal showed half white and half red, according to more evidence it showed nearly all white to a driver who was about

400 yards off, and showed less white as he approached the home-signal, but according to the evidence of the engine-driver of the passenger train, this light at the down home-signal became more white as he approached it. If the signal had been at "all right" it should have shown a green light, and as the engine-driver of the passenger train has been over 28 years in the company's service, and has been driving this train for 15 years, it is remarkable that he should not have noticed the difference on the night in question; but he states that when he was about three or four hundred yards from the signal he thought it was a white light, which is the ordinary "all right" signal at all places except junctions, and he therefore put on steam and continued his journey, and that as he approached the junction he saw three white hand-lamps being waved, and he thought at the time that it was for the purpose of calling him forward, whereas the hand lamps were being waved to call the engine-driver of the goods train back into the sidings. The engine-driver of the passenger train bears a most excellent character, and it is the first accident that he has had during the 28 years he has been driving. This man was no doubt misled by the signal being out of order.

I believe the accident was caused by the signalman having placed the signal lamp skew-ways on the edge of the socket, instead of in the socket.

I recommend that a second pin or guide shall be attached to the lamp stand, and that a large link or some mark be put on the chain to secure the lamp being placed in and wound up to its proper place.

I do not think that the lamps that are wound up with a chain are as safe as those that are fixed in their proper positions.

I have, &c.,
F. H. Rich,
Colonel R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th September.

OLDHAM, ASHTON, AND GUIDE BRIDGE JUNCTION RAILWAY.

Board of Trade,
(Railway Department,)
Whitehall, 2nd September 1876.

Sir,

In compliance with the instructions contained in the Order of the 23rd ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision which occurred on the evening of the 21st ultimo at Oldham station, on the Oldham, Ashton, and Guide Bridge Junction Railway.

This railway is leased conjointly by the London and North-western and the Manchester, Sheffield, and Lincolnshire Railway Companies.

On the day in question a London and North-western passenger train, which consisted of an engine and tender, a composite carriage, a third-class with a break-compartment, two more composite carriages, and another third-class carriage with a break-compartment, and a guard in charge, left Stockport at 7.20 p.m. for Oldham. The vehicles were coupled together in the order they are given. The train arrived at Clegg Street station, Oldham, at 7.50. p.m., five minutes after its proper time. The engine was detached from the train and taken across on to the down line, so that the Lancashire and Yorkshire Company's train might back on to the London and North-western train and take away the front composite carriage, which was a through carriage from London to Rochdale. After the Lancashire and Yorkshire Company's train had gone away, the engine of the North-western train was brought back on the up line, and just as it was about to move back to the rest of the carriages of the train these coaches were run into by a train belonging to the Manchester, Sheffield, and Lincolnshire Company, which arrived at Oldham from Manchester. The Manchester, Sheffield, and Lincolnshire Company's train consisted of an engine and tender, two third-class carriages, one second, one first, and one third with a break-compartment, in which the guard in charge was riding. This train, which was coupled in the order given, arrived at Clegg Street station about 7.58 p.m., eight minutes after the London and North-western train had arrived there. According to the company's working rules, the Manchester, Sheffield, and Lincolnshire Company's train ought not to have been admitted into the station while the London and North-western Company's train was standing there. The arrangements at Clegg Street are undergoing alterations, and the station is at present protected by "home" and "distant" signals, which are worked from the Oldham south junction cabin, which is situated about 180 yards to the south-west of the station. The signal-cabin and the necessary signals for the protection of Clegg Street station are now in course of construction, and until these are completed, the instructions are, that the signalman at the south junction cabin shall not admit a train to Clegg Street station until he receives a hand-signal from the pointsman on duty at Clegg Street station to tell him that the station is clear. On the night in question, the signalman on duty at the south junction cabin fancied that he did get a white light hand-signal from Clegg Street station; but he seems to have been mistaken in this, as the pointsman on duty at Clegg Street was occupied at the east end of the station in holding the points for the engine of the London and North-western train to cross from the up to the down line, for the Lancashire and Yorkshire train to take away the through carriage, and while doing this work he could not possibly be seen from the south junction cabin, nor could the signalman at the south junction cabin see any person on the Clegg Street station platform who were occupied with the London and North-western train. The man who had been collecting tickets from passengers by this train was passing behind the train in order to go from the up to the down platform, when he saw the Manchester, Sheffield, and Lincolnshire Company's train coming out of the tunnel, about 100 yards from where he was standing; this made him turn his lamp to danger, and waive it to the driver of the Manchester, Sheffield, and Lincolnshire train, who at once reversed his engine, whistled for the guard's breaks, and applied steam to his engine.

In consequence of the approach to Clegg Street station being on a curve and through two overbridges and a covered way, which is called a tunnel, it was impossible for the engine-driver of the Manchester, Sheffield, and Lincolnshire train to see the London and North-western train till he was coming out of the covered way. He was then running at a speed of about 10 or 12 miles an hour, and was only about 110 yards distant from the break at the tail of the London and North-western train, he could not pull up, and his engine struck this van at a speed variously estimated from 4 to 8 miles an hour.

Clegg Street station is on a rising incline of 1 in 86, and it is approached from the west on a rising gradient to 1 in 86. The London and North-western coaches, from which the engine had been detached, were standing on this incline, being kept there by the break of the guard's van, when they were struck by the engine of the Manchester, Sheffield, and Lincolnshire Company's train. The coaches were driven forward about 56 yards. The break was knocked out of the gear, one carriage lamp and four carriage

windows were broken. Nine passengers have complained of cuts and bruises, but the injuries are believed to be slight. There were no lights at the tail of the London and North-western train. This train had started from Stockport, and was due at Oldham, where its work is finished for the day, at 7.45 p.m. It is no doubt desirable that the lamps at the tail of trains should be lit, at this season of the year, when it becomes somewhat dark before eight o'clock. Nevertheless, in the present case, I cannot see that the want of lights had anything to do with the accident, as, owing to the iron columns which carry the roof of the covered way at the west end of Clegg Street station, the lights could not possibly have been seen by the engine-driver of the Manchester, Sheffield, and Lincolnshire Company's train until he got within 10 yards of the end of the covered way, and 110 yards from the break at the tail of the London and North-western train.

No persons of the Manchester, Sheffield, and Lincolnshire train were hurt.

The Oldham, Ashton, and Guide Bridge Junction Railway is worked on the block system to the west of Oldham south junction cabin, and as soon as the cabin and signal arrangements are completed at Clegg Street station the line is to be worked on the same principle up to that station, which will prevent accidents of this kind.

The collision which forms the subject of this report was caused by the mistake of the signalman on duty at the Oldham south junction cabin in allowing the Manchester, Sheffield, and Lincolnshire train to pass his cabin before he had received "line clear" from Clegg Street station.

I have, &c.,
F. H. Rich,
Colonel R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Oldham, Ashton, and Guide Bridge Junction, the London and North-Western, and the Manchester, Sheffield, and Lincolnshire Railway Companies on the 19th September.

SUTHERLAND RAILWAY.

Board of Trade,
(Railway Department,)
28th October 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 9th instant, the result of my inquiry into the circumstances attending the collision which occurred on the 14th ultimo at Rogart station, on the Sutherland Railway.

In this case the 1 a.m. up passenger train from Wick, due at Rogart at 5.55 a.m., came into collision with the 1.30 a.m. down special train of empty sheep trucks due at Rogart (where the trains were to pass each other) also at 5.55 a.m.

Complaints of personal injury have been received from 11 passengers, the most serious case being one of concussion.

In the passenger train the guard and breaksman were injured.

Three engines (there were two with each train) and four trucks were slightly damaged.

Rogart station (76 miles north of Inverness) is provided with a long loop or passing-place, measuring 580 yards from points to points. It has both an up and down platform, but unless trains have to cross each other at Rogart both up and down trains use the down line, which is straight, the station buildings being also on the down platform. The station is provided with up and down home and distant signals. The home-signals are on the same post, 242 yards inside the loop north points. The up distant-signal (the only one to which it is necessary to allude) is 385 yards north of the loop north points. This signal, worked from a handle at the loop north points, can be seen for a considerable distance off, and the up home-signal for about 625 yards. The up distant-signal is so interlocked with the points that it cannot be lowered unless these lie right for the *down* line, and when lowered it locks them right for the down line. If a crossing is to take place, the signalman is supposed first to lower the up distant-signal, then to raise it after the train has passed it, then to reverse the points and set them right for the up line, and hold them in that position till the train has passed over them.

The line is straight from the up distant-signal through the station, and falls from the north on a gradient of 1 in 350, which continues for a distance of 200 yards inside the distant-signal; there is then a rising gradient of 1 in 100 for 340 yards (extending to 155 yards inside the loop north points); there is then a level space of 195 yards, and then a rising of gradient of 1 in 75 commences.

The collision occurred on the down loop line, 133 yards inside the loop north points.

The Sutherland Railway (as also the lines north of it) is worked by the Highland Railway Company, the telegraph (without the train staff) being employed for conducting the single line traffic.

The evidence is as follows:—

1. *James M. Stevenson*, driver 12 years on the Highland Railway, employed on the line between Inverness and Wick for the last 2¼ years: "I was "in charge of the leading engine of the 1 a.m. up "train and in charge of the train. The engine "was a six-wheeled four-coupled one, supplied with "the Chatelier break, and a six-wheeled tender with "six break blocks, one to each wheel; fireman "McMillan was alone on the engine with me. We "left Wick punctually, and we left 'the Mound' (the "station next before Rogart) at 5.46 p.m., five minutes "late, with a train consisting of six coaches, a dead-"meat van, a post office van, and two break-vans; "there was a guard in each van, which was coupled "with continuous breaks to the coach next it. We "took on a disabled engine at Aitnabreac to bring into "Inverness for repairs. I knew at Wick by special "time table that I had to pass a special train at "Rogart; this is a regular crossing station, but when "an up train has not to cross a down train there, "the up train runs into the down side of the loop; "when we have to cross a down train we run into "the proper or up side of the loop. For trains from "the north and south there are distant-signals each "way and a double-armed home-signal on the plat-"form. As we approached Rogart at a speed of "17 or 18 miles an hour, steam having been shut "off ½ a mile from the distant-signal, I saw the arm "at all right. I can see the loop points from some "distance off, and when I saw them there was no "one at them, nor anyone coming towards them. "I came on and did not observe that the points were "standing for the down line, until I was about an "engine length off them, and on seeing this I re-"versed my engine, put on steam, and whistled for "the breaks twice, also having my own tender-break "applied. The goods engines were standing about "130 yards from the points, and I struck them at "five or six miles an hour. I should have had about "another 150 yards to run had I been on the up

" loop line. From the up distant-signal I could see " the up home-signal, the arm of which was also " down for me, and I did not see it put up. I was " about two engine lengths from the goods engines " when I saw the pointsman pass them running down " towards the points. I could not say whether any " of the other breaks in my train were applied. I " stepped off just before the collision, (having first " shut off steam) and tumbled down; the fireman " stopped on the engine and was a little hurt. I " have never before crossed a down train at Rogart, " and I have never seen a man holding the points " at either end of the Rogart loop. The distant- " signal handle is close by the points. The collision " occurred at 5.59. Had we been running into the " proper road I should perhaps have had to put on " steam to get far enough. I thought the points- " man might be at the points, but inside the hut, " till I was close on them. After the collision I " found that the wire of the up distant-signal was " out of order and that the signal would not work " properly but remained down. At unusual crossing- " places the practice is to find the distant-signal " at danger and then to have it lowered on whistling " for it, but in this case it was off when I came in " sight of it and I did not think that the points would " be wrong. I remembered that I had to cross the " special train and should have to run into the up " loop line."

2. *Duncan McMillan*, fireman four years: " We were " running at about 20 miles an hour when I saw the " Rogart up distant-signal showing clear, or nearly so; " steam was shut off about ¼ mile from the distant- " signal. I did not notice the home-signal on the " platform. When about 20 to 30 yards from the " points I noticed that they were lying full open for " the straight or down road. On seeing this the " driver reversed and applied steam, and I applied my " break; he had given the break-whistle soon after " passing the distant-signal, to call the guards' atten- " tion, and again on seeing the points wrong. Our " speed on striking the goods engines was four or five " miles an hour. I did not jump off, and was a little " shaken. I saw nothing of the pointsman running " towards the points. After the collision the driver " said he at first thought that he had seen the points- " man at the points, but found it was the shadow of " the door of the cabin."

3. *James Robbs*, driver 13 years on the Highland Railway: " I joined the train at Altnabreac, my engine " having to go for repairs to Inverness. It was " under steam. I noticed that the Rogart up distant- " signal was clear, almost right down. Our speed " at it was from 18 to 20 miles an hour. The first I " knew of anything being wrong was by hearing " Stevenson give the break-whistle about half-way " between the distant-signal and the points. I re- " peated the break-whistle two or three times. My " fireman put his break hard on before we reached " the points. I reversed just about the points, steam " having been shut off before reaching the distant- " signal. Our speed at the points was six to eight " miles an hour, and a little less on collision. I could " not say whether the guards' breaks were applied. " As we were close to the points I saw the pointsman " near the goods engines running towards the points. " Both I and my fireman jumped off just before " striking; we kept our feet and were not hurt."

4. *Robert Henry*, guard 12 years: " I was in " charge of the 1 a.m. train from Wick for Inverness, " and from Golspie the train consisted of 10 vehicles, " including two break-vans. I was in the rear van, " in which there was also a telegraph lineman. I " had command of the break-blocks on the four van- " wheels and on the four wheels of the carriage in " front. We left the Mound at 5.43, two minutes " late, the time of the collision being 5.52. The " train is due at Rogart at 5.53, and should leave at " 5.55. I saw the Rogart up distant-signal showing " caution; our speed on passing it was 17 or 18 " miles an hour, about the usual speed. I first heard " the break-whistle about 200 or 300 yards inside " the distant-signal, and at once applied my break, " which I believe acted properly. I was still putting " on my break when the collision occurred. It " knocked me down, and I was hurt in the shoulder. " I was off duty for a fortnight. I did not see " whether or not the home-signal was off when we were " running in. It was at danger just after the collision. " I have crossed a down train at the Rogart station " before. Before 8 o'clock (the distant-signal never " having been altered up to that time), I went to the " loop points to let the carriages into the loop, and " found them with the catch off, and I had nothing " to do but to shift the points. The signal was " hanging at about the position of caution. I have " before this observed this signal hanging at caution " when it ought to have been at danger."

5. *Murdock Cameron*, goods guard: " I was " breaksman of the 1 a.m. up train from Wick, riding " in the break-van next the engines. Our speed at " the up distant-signal was 18 to 20 miles an hour. " It was hanging at caution, or it might be a point " above caution. The driver gave the break-whistle " about half-way between the distant-signal and the " points. I applied my break and got it well on " before we came to the points. The collision oc- " curred at not a very fast speed. I was knocked " down and hurt and have been off duty four days. " I found the catch off the points about 15 minutes " after the collision, and the signal should consequently " have been at danger, instead of hanging nearly at " caution."

6. *John McKenzie*, goods driver about two years on the Highland Railway: " I was in charge of the " special train of empty sheep trucks proceeding from " Inverness to Forsinard. We left Inverness at " 1.30 a.m., correct time, and on arriving at Rogart " had on 38 waggons and one break-van with a " guard. On approaching Rogart station I found the " down distant-signal at caution, and the home-signal " at danger. The pointsman was not at the points " when we came in, but was coming towards them. " These points had Stroudley's patent lock; without " this, if a pointsman is not at the points we should " try and stop before reaching them. The down " home-signal remained at danger and the up home- " signal also. I first stopped at the water tank, and " then drew forward to clear the points, to the place " where the collision occurred. We arrived at the " tank at 5.43, and drew forward and had been " standing about two minutes when the collision " occurred. While standing at the water column " the pointsman said the up mail was signalled and " would be then about leaving the Mound. I did not " see him after that till after the collision. After the " collision I saw that the up distant-signal was at " caution, but I cannot speak as to the home-signal. " The break-whistle from the mail first attracted my " attention as it was coming over the points. I was " over the railway fence in a field at this time and " made a step or two to get back, but seeing I could " do no good I did not cross the fence and was the " other side of the fence when the collision occurred. " I don't know where my fireman was at this time, " but I saw soon after the driver and fireman of the " other engine, my fireman and the guard all coming " along from the station. My engine was forced back " about an engine length. The tender-break was on. " Four waggons were knocked off the road. I cannot " explain what made me go over the fence. I could " not have set back up the gradient of 1 in 70, not " having sufficient steam to do so, not more than 70 " or 80 lbs."

7. *John McPherson*, fireman four years with Mc Kenzie: " I was away back three or four waggons

" from the pilot engine, talking to the pilot driver " and his fireman, when I heard the break-whistles " from the mail engine. I thought that they " were for the guards' breaks, but as the train was " coming over the points I saw that it was on the " down road, and I ran up to my engine, but the " collision took place before I got up to it. I was " about the level crossing when the collision occurred. " The driver and fireman of the pilot engine had not " time to get on to it. I cannot say how far my " train was driven back. I did not see the points- " man after we arrived. He was not holding the " points when we came in, but was going towards " them. The distant-signal was off for us to come into " the station, but the home-signal was on."

8. *William Sinclair*: "I passed as driver about " six months since. I was going down with the " special train to Helmsdale, there to take other duty. " I was back 30 or 40 yards from the engines, talking " with the other firemen and the guard of the train, " when I heard the break-whistles, and on seeing the " mail take the wrong road I went towards my " engine, but did not reach it before the collision. " My tender-break was on. I did not see the points- " man after he had told us that the mail was signalled " and was passing the Mound. He was coming up to " the points when we came in."

9. *Duncan Campbell*, 2¼ years in the service, at Rogart since June as porter and pointsman, before that at Lentran as pointsman: "The station-master " and myself were both on duty on the morning " of the collision. I arrived at the station about " 5.15 a.m.; I took off the down distant-signal for " the special train, and after doing this I came into " the booking office to see if it was signalled from " Lairg, and finding it was I lowered the home-signal; " the train was then in sight, and I went up to the " points and put the distant-signal to danger, and " reversed the points (after the train had passed " them) so as to lie right for the up passenger " train, and left the down distant-signal at dan- " ger. At this time the up distant-signal was as " I believed at danger, or hanging a wee bit below " it, the same condition in which it has been since " I have been here, drivers taking it for a danger- " signal. I then came up to the platform, and was " engaged in taking some luggage that had arrived " in a carriage for the up train, and was not then " aware as to whether it was or was not signalled " from Golspie. The station-master then came out and " told me that the train would soon be due, and to " go off to the points. I went at once, not having " heard any whistle, and was about half-way between " the platform and the points when the train came " in sight, round by the distant-signal. I ran on " with my arms held out, and was about 10 yards " from the points when the engine passed over them. " I don't know whether the driver saw me or not. " The speed was fast; he gave the break-whistle " when very close to the points, and was trying to " pull up. The up home-signal was never taken off at " all. The station-master told me he had gone to take " it off, but did not do so as he heard the whistles. I " did not go to the points after the engine had passed " through them. I noticed at the time that the " distant-signal was slightly off, but very little. The " handle was lying away from the station (*i.e.*, in the " position of danger). The last up train that had passed " the points was at 3.10 p.m. the day before. I had " attended to that train. I had taken the distant- " signal off for that train, which had come in on " the down line. I was on the platform when it " passed the points. As soon as it had started I went " back and put the signal to danger. The last down " train that passed was the 6.45 p.m. train, which also " passed along the down line. I thought that I " should have had time to set the road and lower " the signal after disposing of the luggage. I should " have first lowered the signal and have put it to danger " after the train had passed it, and then have set the " points for the up loop (which I could not have done " while the signal remained down). I had seen " every day one crossing, and sometimes more than " one, take place at Rogart, and in these cases the up " train always took the up instead of the down line. " On previous occasions I had always been at the " points in time. I have used the signal regularly " for all up trains, and have remained at the points " if there is a crossing. I am not aware if drivers " know when a crossing is to take place that the " distant-signal will be off, but the points wrong for " the up line. The speed of the passenger train " was pretty fast, faster than usual. I said to one " of the drivers of the special train I thought the " up train would be about at the Mound. I did not " go near the points after the collision till about " 8 a.m."

10. *Francis Fraser*, station-master at Rogart six years: "I was in the office and took the telegraphic- " signal for the down special train from Lairg at 5.15; " the train arrived at 5.39. The up train was signalled " from Golspie at 5.27, its proper time to leave being " 5.31. The collision occurred at 5.53, the train being " due to leave Rogart at 5.55. I told Campbell, about " 5.25, that the up train was to cross the down special " train. He ought to have gone to the south end of " the loop and have lowered the distant-signal there " which locked the points; he should not have remained " there, but have gone to the north points, and have " lowered the up distant-signal; then raised it as soon " as the up train had passed inside it, and shifted the " points and made them right for the up line, and held " them while the train passed over them. At 5.40 a.m. " Campbell passed along the platform, coming from the " south end. I don't know what he was about till 5.50, " when hearing a carriage come up to the station I came " out and found him working at the luggage. I said to " him 'What are you doing here, you should be at your " points, go as quick as you can.' He went off at once " and about a minute afterwards I heard the up train " whistle for the signal, a long whistle, and about a " second or two afterwards I saw it come round by the " distant-signal. The arm was at this time about " caution, if anything rather above it. The signal " usually stood at off or on, and I believe it was " now intended to be at danger. I cannot say I had " noticed the signal arm since the 3.10 p.m. up train " had passed the day before, and I don't know whether " Campbell had put it to danger since then. When I " went out at 5.50 I found that Campbell had put the " home-signal to caution, and on hearing the up train " whistle I put it to danger and it remained so till " after the collision. I don't think Campbell would " have had time to get to the points before the train " reached them. I don't think a driver would stop at " the points had he got the distant-signal lowered, and " was going into the loop, if he did not see the " pointsman at the points, as he might think the " pointsman was inside the hut, where they sometimes " remain till the last minute. I had intended Campbell " to go back to the south points and set them right " for the up train after it had arrived, and if he acted " otherwise it was contrary to instructions. I don't " know why the driver of the special train was in " the field; nor do I know who was the first man " at the north points after the collision. The state " of the up distant-signal was always right before, it " stood out straight at danger. The practice is for " the pointsman to be at the points when the engine " reaches the distant-signal, and exhibit a green flag " by day and a lamp by night."

This collision was brought about by two principal causes.

1st. By porter Campbell not having been at his post at the points at the north end of the Rogart loop when the passenger train was approaching the station, and consequently not having set these points right for the up line on to which the train was intended to have been turned.

2nd. By driver Stevenson assuming that the arm of the up distant-signal—which although not properly at danger, was, according to the weight of the evidence, above the position of caution—was off for him, instead of treating it as an uncertain signal, and consequently stopping as soon as he could, and certainly outside the points; and this more particularly when he should have seen that the up home-signal was at danger. Further, Stevenson must have known that with the distant-signal off (as he states he thought it was), the loop points must (owing to the patent catch) have been open for the down line, and it was therefore most imprudent for him not to have brought his train under such control as to have enabled him to stop, if necessary, outside the points.

It is evident that the wire of the up distant-signal was not in good adjustment on the morning of the collision, and it had, according to Campbell's evidence, been in the same condition for some length of time. This latter, if true, reflects blame both on the Rogart station-master and on Campbell.

With the comparatively large amount of break power on the train, viz., that on the two tenders, and on four out of ten vehicles, and considering that there was an ascending gradient of 1 in 100 for 320 yards up to the point of collision, the passenger train must have been entering the station at an injudiciously high rate of speed, or there must have been a want of proper looking out, otherwise, with the efforts stated to have been made to stop, the train could certainly have been brought to a stand 150 yards short of its regular stopping place, and the collision have been avoided.

The drivers and firemen of both engines with the special train had no business to have been all away from their engines when the collision occurred. Driver McKenzie is more to blame than the others for having been outside the company's premises, for no apparent reason.

It does not appear to me that the mode of working at Rogart and at other passing-places is judicious, though it may be convenient. At Rogart, if a crossing is to take place, an up train (intended to enter the up loop line) has the distant-signal lowered for it while the points are set right for the down line, and the pointsman has in the short time occupied by the train in traversing the distance between the distant-signal and the points (in this case 385 yards) to put the signal to danger and reverse the points; if then anything should accidentally go wrong with the points, the chances are that the driver having had the signal right for him would be unprepared to stop (as in the present case) before reaching the points. It is, on the whole, a far safer practice for trains always to run on the proper loop lines, and to arrange the signalling accordingly; but if the present (and to my mind objectionable) mode of working is continued, the signals should, under all circumstances, be kept at danger, unless the points are lying right for the line on which the train is intended to enter the station. According to one of the Highland Company's rules, a pointsman should attend at facing-points and hold them while trains are passing over them, but there is no corresponding rule directing drivers to be prepared to stop outside facing-points unless they see the pointsman in attendance; this seems to be an important omission, and one which should be rectified.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the Company on the 28th November.

TAFF VALE AND GREAT WESTERN RAILWAYS.

Board of Trade,
(Railway Department,)
1, Whitehall, 12th October 1876.

Sir,

In compliance with the instructions contained in the order of the 25th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 18th ultimo at the west-end of Quakers Yard low level station.

The engine-driver and fireman of the train were slightly hurt.

The engine and front coach of a Great Western passenger train from Merthyr to Quakers Yard got off the rails at the points of the junction of the Taff Vale and the Great Western railways; this junction is about 160 yards to the west of the Quakers Yard low level station.

The points and signals at this junction are worked from a raised cabin close to the junction, and are interlocked with each other, but the locking arrangements are very old and of the treadle pattern, which is now obsolete, because not so effective as the mechanism now adopted for locking the points and signals.

The railway at the junction falls towards Quakers Yard on a gradient of 1 in 290, and curves to the north-east on a radius of 20 chains.

On the day in question the passenger-train consisted of a tank-engine (running with the coal-bunk in front), four passenger carriages, and a break-van with the guard in charge at the tail of the train. It left Merthyr at 12.40 p.m., and arrived at Quakers Yard, Taff Vale Junction, at 12.59 p.m., about two minutes late. The distant and home-signals were lowered for the driver to run to the station, and he passed the junction at a speed of about 8 miles an hour. As his engine reached the junction facing-points it got off the rails between the Taff Vale and Great Western lines of rails. The coach that came next followed the engine, and the rest of the train remained on the rails. The engine-driver and fireman jumped off their engine. Steam had been shut off and the engine-break had been applied before the firemen jumped off. The engine and train came to a stand about 61 yards from the junction-points.

No passengers were hurt.

The permanent way at the junction consists of a double-headed rail which weighs 76 lbs. per lineal yard; it is fished, and fixed with inside keys in cast-iron chairs that weigh about 30 lbs. each. The chairs are fixed to transverse sleepers with two wrought-iron spikes.

On examining the permanent way after the accident the connecting-rod farthest from the points was found to be bent; the heel chair of the right-hand or southern point was broken, and the remainder of the permanent way was uninjured. The heel chair had certainly been broken by the engine taking the wrong side of the points, and it is probable that the connecting-rod was bent at the same time.

After the accident the locking-gear was found to be slightly loose, so that if the lever that works the facing-point was pressed, one tongue could be pushed about half an inch from the rail.

The right-hand point rail was rubbed at the back, by the engine wheel that got in between it and the stock rail. It thus got off the proper rail and caused the accident.

The signalman on duty at the junction is a servant of the Taff Vale Company. The outside of the junction house, and the chains inside the cabin by which the signal and locking bolts are worked have been repaired hitherto by the Great Western Railway Company, but that company does not acknowledge to

being responsible for the maintenance of the locking arrangements, and considers that the Taff Vale Company's servants, who repair the points and crossings and permanent way at the junction, were also in charge of the locking gear. The Taff Vale Railway Company deny having ever had charge or repaired the locking gear. As the Great Western mechanic who is charged with the reparation of the locking and signals on this part of the Great Western Railway has hitherto repaired the chains by which the signals and locking are worked, and as after the accident on the 18th ultimo, he also repaired the hole in the sliding plate through which the locking bolt works, I think the Great Western Railway Company must be considered to have been in charge of the signals and locking gear.

The accident was caused by these locking arrangements not being kept in perfect order. It would be desirable that the works which each of these companies is to take charge of should be more distinctly defined for the future.

The locking arrangements, which are of an antiquated pattern, should be renewed, and the arrangements of the junction and yard improved.

The gauge of the stock rails at the points should be well secured with iron tie rods between the rails or between the chairs.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

F. H. Rich,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 26th October.

REPORTS

OF THE

INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT

TO THE BOARD OF TRADE,

UPON

CERTAIN ACCIDENTS

WHICH HAVE

OCCURRED ON RAILWAYS

During the Month of October,

1876.

(PART SEVENTH.)

Presented to both Houses of Parliament by Command of Her Majesty.
February 1877.

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BELFAST AND NORTHERN COUNTIES RAILWAY.

Board of Trade,
(Railway Department,)
SIR, *21st October* 1876.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the order of the 9th instant, the result of my inquiry into the circumstances connected with the accident which occurred on the 2nd inst., at Cookstown Junction Station, on the Belfast and Northern Counties Railway.

In this case, as the 7.30 p.m. down passenger train from Belfast for Ballymena was running through the facing points at the up end of the Cookstown junction station loop, the engine, tender, and two carriages, which composed the train, left the rails.

No personal injuries were sustained.

The break gear of the tender was slightly damaged, and about 20 yards of the permanent way of the up line were torn up.

The points at the Belfast end of the Cookstown junction station loop are 350 yards from the Belfast end of the platforms, and 500 yards from the signal cabin at the junction of the main line and the Cookstown branch. The points are weighted to lie open for the down line, and should be locked in that position by the lowering of the down distant signal, on the wire of which there is a point-bolt. A point indicator, consisting of a revolving disc and lamp, is also attached to the points, showing at night a large white light to the front, and a small one to the rear, if the points are properly closed. The down distant signal is about 400 yards from the points, and the down home signals are near the signal cabin.

The station is approached from Belfast by a right-handed 30-chain curve, and on a rising gradient of 1 in 180.

The evidence in this case is as follows:—

1. *John Doyle*, signalman 24 years at Cookstown junction station.—This is the first accident inquiry at which I have been present. I came on duty at 6.15 a.m. on the 2nd inst. to work till 9 p.m.; at other times I go off duty at 6 p.m. At about 8.15 p.m. the 5.10 p.m. up goods train from Cookstown passed through the points at the up end of the loop. No shunting took place at these points, and nothing passed through them after this until the 7.30 p.m. down train from Belfast came in at 8.38 p.m.; for this train I lowered the distant signal before the driver whistled. I noticed nothing unusual in the pull of the lever, and I observed that the back light of the signal showed white, which indicated that the signal was off. I then heard a crash, and I was afraid something had happened. I know nothing more about the accident. I do not remember anything going wrong before at these points. The bolt was put on the signal wire about last April.

2. *John McCrory*, driver 17 or 18 years.—I joined the 7.30 p.m. from Belfast at Carrick junction. My engine was a 4-coupled one with a 6-wheeled tender. The train consisted of only two carriages. We were keeping time. When I first saw the Cookstown junction distant signal, which is visible for a long distance, it was off, without my whistling for it. I was travelling about 10 miles an hour, having shut off steam about ¼ of a mile back, when I saw the point indicator from about the usual spot, and it showed a white light. It was a wet night, and I did not notice that the indicator light was smaller than usual. I also saw that the home signal was off when at the distant signal post. On reaching the facing points I felt the engine and tender wheels leave the rails, and am positive the leading wheels of the engine went first. The break was being put on at this time, and the engine soon stopped, having run 63 yards from the points to the leading wheels. I felt the leading wheels remount the rails about the fixed crossing, where the check rail was knocked forward 3 or 4 yards. Neither I nor the fireman jumped off. On getting down, I found the driving and trailing wheels of the engine close against the rails, and also the wheels of the tender. I did not observe particularly the positions of the wheels of the carriages. I went back to the points and found them half open. I did not notice the position of the indicator nor that of the bolt lock. The engine and tender were very slightly damaged.

3. *Alexander Shannon*, 6 years fireman. Almost all the time with McCrory.—The Cookstown junction distant signal showed a good white light as we approached it. I saw it off before the driver whistled. I saw also the light of the point indicator, and it was showing white, but whether the back or front light I could not say. I was putting on the break at the time. The speed was 10 miles an hour. Steam was shut off before coming to the distant signal. Nothing went wrong till the engine jumped at the points. I could not say whether the leading wheels had ever been off, but when we stopped all the engine wheels except the leading wheels were off. Neither of us jumped off. The wheels were from one to two feet from the rails. The left tongue of the points was about 1½ in. instead of 4 in. from the stock rail. I did not notice the position of the indicator.

4. *John McCullough*, guard 20 years.—I accompanied the 7.30 p.m. train from Belfast. I was riding in the break compartment, viz., the last compartment in the last carriage. There were only two carriages on the train, and about four or five passengers. I noticed the light of the distant signal, which was a good white one. I noticed also the indicator light, and it showed a white light, the same as usual. I heard the engine make an unusual noise, and then I saw the front carriage tumbling about, and then my own carriage left the rails. The train then stopped with the trailing wheels of the last carriage on the rails of the up road, and all the other wheels off the rails. The speed at the points was quite slow. I had my break on from about 200 yards beyond the distant signal. None of the passengers were hurt. I noticed that the left tongue of the points was only open about an inch instead of 4 inches. I did not notice that the indicator was turned nearly round.

5. *Thomas Ryan*, station master at Cookstown junction station 2 years; previously a guard for 18 years.—Nothing has gone wrong at the facing points previously to this accident since I have been here. I was up at the points three minutes after the accident occurred. I noticed the points lying at "half-cock." The left tongue was nearer to the rail than the right tongue. I did not notice the distant signal, but I saw that the indicator was turned round so as to show the white back light to an incoming train. I found that I could not set the points right for a down train. I thought that the last outgoing train had forced the indicator round. All the wheels were off the rails except the front wheels of the engine, which were on the right road, and the rear wheels of the last carriage, which were on the wrong road.

The station inspector, who was travelling in the train, corroborates the evidence as to the position of the points and point indicator after the accident. He also observed that the distant signal was showing a white back light, and that the bolt lock was forced against the point lever, and had not passed through the hole in it. He tried to restore the points to their proper position, but was unable to do so.

The points themselves were not damaged, nor the connecting rods bent, but there were marks on the chairs, &c., indicating that the wheels must have been astride of the points.

The evidence in this case leaves no room to doubt that the passenger train left the rails in consequence of the loop facing points being half open when the

engine reached them; also that the distant and home signals were right for the driver to enter the station, and that the point indicator was showing a white light to the front (though the small back one instead of the proper front one). There is consequently no blame to be attached to the servants of the company. The difficulty was to account for the wrong position of the facing points and point indicator when the signals were taken off for the passenger train. By dint of sundry trials and altering the adjustment of the point indicator, I managed after a time, by strongly pressing on the point lever, to throw the points and indicator into the position they must have occupied when the train approached them, and from which, owing to the crank working the indicator having been thrown over its centre, they could not be brought back without disconnecting the indicator. I therefore came to the conclusion that the up goods train, which had passed through the points in a trailing direction some 20 minutes before the down passenger train arrived, must have so acted on the points as to have forced the indicator into the position in which it was afterwards found, and from which it could not return (and so kept the points half open) until it had been disconnected. I am not aware of any previous instance of a similar displacement of a point indicator, but a recurrence of the same thing might be prevented by a stud being fixed to prevent the quadrant of the indicator travelling beyond the proper point.

This accident furnishes another instance that wire locking is not to be fully depended on for facing points, as, unless the wire is kept in first-rate adjustment, so as to keep the bolt close to the transverse bar when the signal is at danger, the signal can be pulled off, and the wire stretched sufficiently to get the signal lever into its notch without the bolt having locked the points.

Before, therefore, a train passes over wire-locked facing points they should always be looked at to see that they are properly closed.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

C. S. Hutchinson,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 11th November.

GREAT NORTHERN RAILWAY.

Board of Trade,
(*Railway Department,*)
13, *Downing Street,*
31*st October* 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 20th instant, the result of my inquiry into the circumstances connected with the collision that occurred on the 10th instant at the Holmes west junction, Lincoln, on the Great Northern Railway, between a Great Northern passenger train and an iron ore train belonging to the Manchester, Sheffield, and Lincolnshire Railway Company.

Four passengers are returned by the company as having been injured on this occasion. Six waggons of the Iron Ore Company were thrown off the line, of which four were smashed and broken up, one was slightly damaged, and the break-van was thrown off the rails, and a good deal damaged. The engine of the Great Northern passenger train had the leading buffer-plank broken, valve spindle bent, steam chest cover gland broken, foot-plate bent, and the framing of the engine strained. The tender was not damaged, but three of the carriages were slightly damaged.

The Manchester, Sheffield, and Lincolnshire Railway Company have running powers over this part of the Great Northern Railway, and a portion of double line was constructed commencing at the Holmes west junction for separating the passenger traffic into and out of Lincoln station, on the line between Doncaster, Gainsborough, and Lincoln, from the goods traffic proceeding into the goods yard at the Holmes.

The length of the double lines of railway constructed to enable the passenger train to enter and leave Lincoln station without passing through the goods yard is sufficient to provide a length of line in the goods yard for two long goods or mineral trains. It was opened for traffic in April 1873, and it does not appear to have been previously inspected by any officer of the Department.

This junction is protected in the usual manner by distant and home signals in each direction, and the Holmes west junction signal-box is one of the first out of Lincoln for working the block system on this section of the Great Northern Railway. The actual junction up these double lines with those of the straight road leading into the goods yard is situated about 18 yards east of the centre of the signal-box, and not immediately opposite to it.

It should be stated that it appears from the records kept in the Holmes west junction signal-box, that a Great Northern up coal train passed into the goods yard at 7.41 p.m., the Manchester, Sheffield, and Lincolnshire iron ore train arrived at 7.55 p.m., and the Great Northern up passenger train that ran into the iron ore train at 8.0 p.m.

The evidence of the company's servants who are mixed up in this collision is as follows:—

Thomas Stow, engine-driver in the service of the Manchester, Sheffield, and Lincolnshire Railway Company, states: "That he was the driver of the Man-
"chester, Sheffield, and Lincolnshire iron ore train,
"partly loaded and partly empty, from Chapel Town
"at 1 h. 40 m. p.m.: that he was stopped on the road by
"other trains and by shunting, which was the cause
"of his being so late: that he reached Lincoln, West
"Holmes junction at about 7 h. 50 m. p.m., and was
"due there at 5 h. 20 m. p.m.: he found all the signals
"on at danger against him, and he had just pulled
"up his train when the signalman gave him a green
"light to draw into the goods yard: that he thinks he
"had nearly 40 waggons on and he drew forward
"and stopped close against the coal train break:
"that he stopped there from four to five minutes
"before he was run into: that he did not see the West
"Holmes junction signals taken off for any other
"train: that the coal train remained standing in front
"of him until after the collision took place: his train
"and the coal train were both knocked ahead three or
"four waggons length, but he does not know what
"damage was done to his train."

Thomas Talbot, engine-driver, in the service of the Great Northern Railway Company for 17 years, and who joined the company in 1851, states: "That he was
"driving No. 66 up passenger train from Doncaster
"to Lincoln: that his train consisted of an engine and
"tender, five coaches, and a van, and he left Doncaster
"about 6 h. 45 m., the proper time, and as he ap-
"proached the West Holmes junction he found the
"signals for the passenger line all right for him to
"proceed, and he was running at from 10 to 12 miles
"an hour as he was passing the junction: that when
"he was about 40 yards from the tail of the other
"train he became aware that it stood foul of the line
"on which he was running: that he had shut off the
"steam about a mile before he got to the junction,
"and he had just time to pull the reversing-lever

" back and say 'Wo' to his mate, when the collision " took place: that his engine was not thrown off the " road, but some of the vehicles of the other train " were knocked off: that the collision took place about " 8 o'clock, and he was due at the ticket platform at " 8.3 p.m., and was therefore running to his proper " time."

John Willson, signalman two years, and three years altogether in the service of the Great Northern Railway Company, states: "That he came on duty at " 6 a.m., and was about to leave at 7 h. 50 m. p.m., " as the signalman who was to relieve him had been " on leave from the previous Saturday, and until " about half-past 7 o'clock on that day, when the " train by which he would return to Lincoln was " due: that a Great Northern coal train went into " the station yard about 7 h. 40 m., and it was followed " by the Manchester, Sheffield, and Lincolnshire iron " ore train, for which line clear had been given to " Foss-dyke at 7 h. 56 m., or about that time: he " was in the signal-box at that time when 'line clear' " was given, but line clear was given by the lamp- " lighter, and that was in consequence of his not having " been well, he had not been well all day, and the " lamp lighter came into his box about 7 h. 20 m. p.m.: " that he did not tell the lamplighter to give 'line " clear' for the 6 h. 45 m. p.m. up passenger train: " that he did not himself notice whether the line was " or was not clear at the junction: that it was a very " dark night: that he was in the act of leaving the " signal-box, when the relieving signalman, who got " into the box about 7.50 p.m., and had taken 'train " on line' for the passenger train from Foss-dyke " signal-box, and he thinks he pulled off the signals " for the passenger train after he had taken 'train on " line:' that the relieving signalman asked him if " that was a passenger train, as he accepted the signal " 'train on line:' that the relieving signalman dis- " covered that the line was not clear before the col- " lision took place, and he threw up the out-of-door " signals, the distant-signal first, and then the home " on account of the interlocking, and he made the " remark that the iron ore train was standing foul of " the passenger line, before he reversed the signals, " and immediately before the engine reached the " signal-box: that the collision took place about 8 " o'clock, but he does not think that the reversing of " the signal took place soon enough to have given any " effective warning to the driver of the passenger " train."

Charles Shelley, signalman two years, and seven years in the service of the Great Northern Railway Company, states: "That he arrived in the West Holmes " junction signal-box about five minutes before the " accident occurred, and when he got there he found " Willson and his wife, and the lad Stewart, lamp " porter: that as soon as he got to the door of the " signal-box the bell was ringing from Foss-dyke to " call attention, and he asked his mate Willson why " Foss-dyke should be ringing in that manner, or " should be continually ringing, and he said he did " not know, unless he was ringing for 'line clear:' " that he reached the signal-box from the station, " passing by the way of the passenger lines, walking " down by the 6-ft. space: that he arrived in the " box an hour later than usual, as he had been off " duty for the day, and had had permission to be " absent: that he had made an agreement with Will- " son to stay an hour beyond his usual time: that his " first duty was to take the 'passenger train on line' " from Foss-dyke, and he accepted 'train on line,' not " knowing whether it was for a goods or a passenger " train, at 7 h. 56 m. p.m., and the earth being bad he " could not understand the signal from Foss-dyke, " whether it was a goods or a passenger train, as the " needle fell over to 'train on line,' and he could not " make out the number of ticks, there would be two " for a passenger and three for a goods train: that he " then asked Willson if the train had been reported " from Saxelby, and he replied no: that it was usual " for all trains to be reported from Saxelby on the " speaking instrument: that he wanted to know which " train it was before he set the points right either for " a goods train to run into the goods yard, or for a " passenger train: that he then commenced to call " Saxelby, and after gaining attention, Saxelby replied " that it was a passenger train, and on turning round " from the instrument the first thing that he saw was " that the train of empties (iron ore train) was not " clear of the junction, and he found the signals had " been taken off by the lad porter Stewart while he " was at the telegraphic instrument: that he had not " told him to take them off, neither had he heard " Willson tell him to take them off: that he at once " placed the signals at danger, and he turned the red " light on in his hand-lamp, and at once swung it " outside the signal-box towards the driver of the " passenger train, who might, at that time, be 60 " yards from the signal-box: that the guard's break " of the iron ore train was drawing past the signal- " box as he entered it: that the passenger train passed " at about its usual speed, but he did not observe " whether the driver of the passenger train did any- " thing as he was approaching the signal-box: that " the collision occurred about 8 o'clock: that he had " asked the lad porter Stewart to take his tea down " to the signal-box as it would enable him to get to " the signal-box earlier than if he went home first, as " he came in from Spilsby; the train which was due " in at 7.25, but was about 10 minutes or a " quarter of an hour late: that after the accident " occurred he telegraphed to Mr. Johnson for " assistance."

Alfred Stewart, lamp porter at Lincoln station, 12 months in the service of the Great Northern Railway Company last June, states: "That on the 9th October " he got to the West Holmes junction signal-box " about 7h. 20m. p.m., having taken down signalman " Shelley's tea for him, and he found signalman " Willson and his wife there: that the first thing he " did was at 7.25 to take the 'be ready' signal from Foss- " dyke for the Manchester, Sheffield, and Lincolnshire " iron ore train of empties: signalman Willson took " 'train on line' and booked the train: the signals " were not taken off, but the train was called forward by " a green hand-lamp by Willson, and he booked the de- " parture of that train in the station yard, and gave 'line " clear' for that train at 7h. 55m.: Shelley was not " in the box at that time, but he was just arriving, " and was at the bottom of the steps of the signal-box: " as soon as Shelley got into the box, Foss-dyke rung " the bell for 'passenger train on line:' Shelley " took 'passenger train on line' at 7.56, and he " thought he had three ticks on the instrument instead " of two ticks, and he asked his mate if he had " received notice of a passenger train from Saxelby: " Willson said 'No:' Shelley called Saxelby, and " asked what train it was: Shelley then got an " answer from Saxelby, who said it was No. 66 " passenger train: that while Shelley was taking " 'train on line,' and calling Saxelby for the passenger " train, he, Stewart, pulled the main line points over " and lowered the main line signals for a passenger " train to pass: nobody told him to do it: but as " signalman Willson was ill, he did it under the " impression that the empty train was clear of the " junction: that he looked to see that it was clear " before he pulled off the signals."

William Brompton, guard of the iron ore train, " Manchester, Sheffield, and Lincolnshire, states: "That " the train consisted of 32 vehicles, including the " break-van: that it got into the station yard at " 7.55, and he rode in the last vehicle, and when " the train stopped: his train was not clear of the up " passenger line: that he did not go and tell the " signalman that his train was not clear: that there " is no rule in their book of regulations that required " him to go and tell the signalman that his train was

" not clear: that in about two minutes he went for-
" ward towards the engine to tell his driver to draw
" ahead, but had not reached the engine before the
" collision took place, and there is no rule telling him
" to do this: that it is the practice on the Manchester,
" Sheffield, and Lincolnshire to tell the driver, but not
" the signalman, at a junction when the tail of a
" train is not clear, when it is under the protection of
" the signals: that one of the signalmen looked out of
" the window of the signal-box after they had
" stopped, but he did not speak."

It also appears that the collision between the engine of the Great Northern passenger train and the break-van of the Manchester, Sheffield, and Lincolnshire iron ore train took place about 20 yards east of the facing-points over which the passenger train had just passed on its way to the avoiding passenger line, towards the Great Northern passenger station at Lincoln.

It was caused by the mistake of the signalman Shelley, who had been on leave during the day, and who had just got into the signal-box at Holmes west junction as the Manchester, Sheffield, and Lincolnshire iron ore train was in the act of passing into the goods yard, and as the telegraph bell was ringing from Foss-dyke block signal-box he accepted " train on line" from Foss-dyke without having previously looked, as he admitted he should have done, to see whether the Manchester, Sheffield, and Lincolnshire iron ore train stood clear of the junction. This signalman, Shelley, had arranged with the other signalman, Willson, that he should remain beyond the proper hour for the relief to take place (7.0 p.m.), to allow of his getting back to Lincoln from Spilsby by a train due at 7.25 p.m., and to save time he had told the lad porter Stewart to take his tea down to the signal-box. When Shelley got to the signal-box, he found Willson, who had been ailing all day, his wife, and the lad porter Stewart, present in the signal-box, and the latter, with the object of assisting Willson, while Shelley was inquiring of Saxelby whether the approaching train was a passenger or a goods train, improperly meddled with the signals, and set both the distant and home signals at all right for the approaching train, while the iron ore train, as it proved, and as it was seen by Shelley immediately he looked in that direction, did not stand clear of the junction, so that signalman Shelley and lad porter Stewart were both concerned in causing the collision, but the fault lies principally with the signalman.

No blame attaches to the servants of the Great Northern Railway Company in charge of the passenger train; nor to the driver and fireman of the Manchester, Sheffield, and Lincolnshire iron ore train, but the officer of the Great Northern Railway Company, Mr. Cockshott, superintendent, appeared to think that some blame attached to the breaksman of that train for not having called out to the pointsman during the two minutes that he stood still at the tail of his train, before he went forward to tell his driver to draw ahead, that it was not clear of the junction: but it appeared quite plain that the signalman Shelley knew perfectly well that the iron ore train was not clear of the junction immediately he looked in that direction, and after he had resumed his duty the lad porter Stewart should not have been permitted to meddle with the signals.

It is true that this collision would not have occurred at all if the Manchester, Sheffield, and Lincolnshire iron ore train had not been hours behind its appointed time: neither would it probably have taken place if the driver of the Great Northern coal train had drawn his train up at the proper place further ahead, and not have stopped it for the convenience of the men who had to grease the axle-boxes, nearly opposite to the grease house.

The Great Northern Railway Company were engaged when I visited this locality in preparing to carry the junction considerably further to the west to prevent a similar mistake from taking place, but, in my opinion, the alteration is uncalled for, and the junction points certainly should not be put in more than 10 yards to the west of the centre of the signal-box.

I have, &c.,
W. YOLLAND,
Colonel.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Great Northern and Manchester, Sheffield, and Lincolnshire Railway Companies on the 15th November.

GREAT WESTERN RAILWAY.

SIR, *Bristol, 13th October* 1876.

IN compliance with the instructions in the Order of this date, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 2nd of October, at the North-Somerset junction, about three quarters of a mile on the east of the Bristol station, on the Great-Western Railway.

In this case, the second part of the 3.0 p.m. up-express-train from Bristol for London came into collision, about 3.27 p.m., with some narrow-guage cattle-trucks, which were being shunted back from the up-main-line into a siding on the north of it, near the North-Somerset junction. Two cattle-trucks were knocked off the line, and damaged, but no passengers were injured.

The North-Somerset junction is protected by a home-signal 50 yards on the Bristol side of the point of collision, and by a distant-signal 425 further in the direction of the Bristol station. This latter signal is close to the South-Wales junction-cabin.

Evidence.

The signalman on duty in the North-Somerset cabin, *Henry Paisley*, states that he received a signal from the A cabin at 3.25 p.m. for the express and passenger-train in question. At that time a goods-train, consisting mainly of transfer-trucks, was being shunted across from the sidings on the south of the main-lines to the sidings on the north of the main-lines. He therefore kept his home and distant signals at danger against the express-train. The transfer-train was crossing from the down to the up main-line at the time he received notice of the approach of the express-train. About a minute later he saw the express-train passing his distant-signal with full steam on. He said to his mate, George Molton, " This man is not going to pull up," and he ran down out of his cabin, and gave the passenger-driver a signal of caution with a red flag. The goods-train had then got through the " cross-over-road," and was being backed into the up-line sidings. He saw the engine-driver of the passenger-train about 100 yards inside the distant-signal, and ran down the line to meet the passenger-train, and got opposite the train just as it stopped. He said to the driver, " How was it you did not see our signals, and why ever did you not blow your break-whistle?" The driver turned and looked round to the fireman, but did not reply. The engine of the passenger-train did not leave the line, but the train was detained seven minutes, whilst the cattle-truck which had been knocked off the rails was got out of the way.

Ground-policeman *George Molton*, employed at

North-Somerset junction-cabin, heard the signalman call to him from the cabin that a passenger-train was approaching, and that it could not pull up. He saw signalman Paisley run out of the cabin, and down the line, with a red flag in his hand; and he went into the cabin and remained there until Paisley returned. He saw the engine-driver shut off steam about 100 yards after he passed the distant-signal. The passenger train was going very little more than walking speed when the collision occurred.

A goods-inspector, *William Jefferies*, saw the passenger-train when it was about half-way between the distant and home signals. He saw that the signals were against it, and that the driver was running faster than he ought to have been. He shook his hand at the engine-driver, and pointed to him to look in front, and see the transfer and cattle waggons which were being backed into the up-line sidings. At that moment the engine-driver reversed his engine, and was about 200 yards from the backing train. When he got within 40 or 50 yards of the goods-train he applied steam; but the rails were very greasy. The engine-driver did not blow the break-whistle, and thus he had greater difficulty in stopping his train. He looked into the vans, hoping to see the guards and induce them to apply their breaks, but he could not see any of them.

This backing goods-train consisted of an engine and tender and 42 waggons.

The engine-driver of the passenger-train has been dismissed from the Company's service, and did not appear at my inquiry. I am informed that he stated before the Company's officers that he missed the distant-signal, and then found, on seeing the danger, that it was too late to stop his train. The guard of the train heard no break-whistle, and knew nothing of any obstruction being in the way until the collision occurred.

Conclusion.

There is no doubt that this collision was caused by a want of caution on the part of William Harding, the engine-driver of the passenger-train, who neglected to keep a good look out or to obey the signals exhibited to him.

The levers for working these signals in the cabin are interlocked with the siding-points and cross-over-road points, and were therefore necessarily at danger as the passenger-train approached them. I learn that it is not possible, in the working of the incessant traffic on this part of the line, to arrange for blocking back from the North-Somerset junction-cabin to the South-Wales junction-cabin, and so to prevent any passenger-train from approaching the North-Somerset junction whilst goods-trains are being shunted near that junction, or whilst conflicting trains are passing through it. Having regard to the positions of the sidings, with the main-lines running between them, it becomes constantly necessary to shunt goods and cattle trucks across both main-lines, from one side to the other of them. It is not consistent with safe and proper working that line-clear should be given to the South-Wales junction cabin, for an advancing express-train, when it is within a quarter of a mile, or less, of such shunting operations. As I have had to mention in previous reports, additional siding accommodation is urgently required in the neighbourhood of the Bristol station to prevent this constant obstruction of the passenger-lines, to enable the traffic to be worked without the delay and risk to which at present it is subject, and for the avoidance of collisions of this description. At present, from the want of siding room, the passenger-lines are constantly blocked,—and sometimes for a considerable distance in each direction,—with goods vehicles waiting to be received and distributed into the different sidings; and frequently, for want of receiving goods-lines, arriving goods-trains are obliged to be sent to the Harbour-Branch, commonly employed for outgoing-trains, so as to cause obstruction to the line on which the goods-trains ought to depart, and delay to both the passenger and the goods traffic.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th October.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade,
(*Railway Department,*)
Sir, *Whitehall, 15th November* 1876.

In compliance with the instructions contained in the order of 17th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 12th ultimo, at Robin Hood Colliery junction, on the Lancashire and Yorkshire Railway.

The 10.50 p.m. down passenger train from Manchester to Bolton ran into the 11.25 p.m. up passenger train from Bolton to Manchester, close to Robin Hood junction signal-cabin. Five passengers are reported to have been slightly shaken, and the engine-driver of the train from Manchester was hurt.

The colliery junction at Robin Hood is protected with the ordinary home and distant signals, which are interlocked with the points and worked from a cabin close to the junction.

On the day in question, a train of empty coaches which consisted of an engine and tender, a third-class passenger carriage, with a break-compartment and a guard, and nine other coaches left Victoria station, Manchester, at 10.40 p.m., for the purpose of being put into the sidings at Pepper Hill, which is about a quarter of a mile to the west of Clifton junction station. The train was brought to a stand at the Pepper Hill junction, and the guard in charge, who was riding in the break-carriage next the engine, called to the Pepper Hill pointsman as he passed his cabin, that he wished to put his train into the sidings. When the driver pulled up, he thought that his train was clear over the points over which he wished to back his train into the sidings. As soon as the Pepper Hill pointsman gave the all-right signal, which was repeated by the guard of the train, the driver backed his train towards the sidings. He had hardly moved it a carriage length when the pointsman shouted, and the engine-driver stopped the train, feeling that something was wrong. When the train was brought to a stand, the men in charge found that the last carriage, instead of moving over the crossing into the sidings, had been pushed off the line, and the next coach to it had two wheels pushed off the rails. These coaches fouled the up and down lines of rails. They had been pushed off the road in consequence of the last coach of the train not having been drawn clear over the points, and consequently, when the train was backed, the front wheels of the last coach got on one side of the points, whilst the trailing wheels were on the other side.

As soon as the pointsman at Pepper Hill found what had occurred he blocked both the up and down lines. The block station at the east side of his cabin is at the east end of Clifton junction station, and the

block cabin at the west side is at Robin Hood junction, which is about half a mile further west.

Whilst the lines were blocked at Pepper Hill the 10.50 p.m. train from Manchester to Bolton arrived at Clifton junction. It was stopped by signals and allowed to draw up to the platform. This train consisted of an engine and tender, a break-van next the tender, and six carriages, four of which were coupled to the break-van with continuous breaks. It was detained at Clifton junction until about three minutes past twelve, at which time the Clifton junction station-master had got the up line clear. He arrived from Robin Hood junction with the pilot engine, which had been attached to the train of empties, and he proposed working single line between Clifton junction station and Robin Hood junction until the down line was also cleared of the empty coaches that had been pushed off the rails at Pepper Hill.

The station-master on leaving Robin Hood junction had told the signalman there, not to allow anything to pass until he should return, but he neglected to inform the signalman that he was going to work single line on the up road, and consequently this man was left in ignorance, whether the up or down line was to be used. The 11.25 p.m. train from Bolton was standing at Robin Hood junction when the station-master left this junction to go to Clifton junction for the down passenger train, but he did not take the up train with him, as he was not certain that the up line was perfectly safe to run over. When the station-master arrived at Clifton junction station on the pilot engine, he told the pointsman on duty that he was going to work single line on the up road, and desired him to allow the passenger train which was standing on the down road to put across on to the up road and proceed by that road to Robin Hood junction. The passenger train was shunted accordingly, and proceeded to Robin Hood junction followed by the pilot engine, with the station-master who was acting as pilotman on the engine. This pilot engine instead of following the train as it should have done, pushed it all the way to Robin Hood. The engine-driver of the passenger train who was in front of the train on his engine put on steam to start the train, but shut off steam as he passed Pepper Hill junction and desired his fireman to apply the break. He also whistled, the down line signals of Robin Hood junction were lowered as he approached them, and the train proceeded at a speed of about four or five miles an hour, and as it reached the cross-over road between the up and down main lines, which is situated about 60 yards to the east of the Robin Hood junction cabin, the engine-driver and fireman observed that these points were not set for the train to cross over on to the proper line. The engine-driver immediately whistled sharply for the points to be made, and for the breaks, reversed his engine, applied steam, and told his fireman to tighten the tender-break, but he could not stop his train before it ran into the engine of the train from Bolton, which was standing on the up line at the junction cabin about 60 yards inside the points. The engine of the down passenger train struck the engine of the up passenger train from Bolton at a speed of about two miles an hour. The engine of the train from Bolton was not injured, but the engine of the train from Manchester was slightly damaged. Nothing was thrown off the rails.

The train from Bolton consisted of an engine and tender, two coaches, a break-van with the guard in charge, and five coaches behind it coupled to the break-van with continuous breaks.

The signalman on duty at Robin Hood junction had received train on line from Clifton junction when the down train from Manchester left Clifton junction station on the up line, and he lowered his signals accordingly for the train to pass, believing at the time that it was on its proper road. As his signals and points are interlocked it was impossible for this man to alter the position of the points of the cross-over road, by which the Manchester passenger train should have crossed from the up to the down line at his junction while these signals were lowered, and he did not become aware of the train being on the wrong road till it was too late to alter the points.

The station-master at Clifton station was relieved from duty between seven and eight o'clock in the evening, and he left about that hour on the night of the accident. He was passing the station on his way home about half-past eleven, when he noticed that there was something wrong, went to the station, and on finding that the empty coaches at Pepper Hill had got off the rails, he at once proceeded to make the necessary arrangements for clearing one line and passing the up and down trains along the other line.

When the coaches were got clear of the up line, he proceeded to Robin Hood along the down line with the pilot engine which had been attached to the train of empty coaches, and thence by the up road to Clifton junction.

The station-master by returning to the station when he was off duty showed himself anxious for the proper working of the railway, but he neglected to carry out the Company's regulations, which are very distinct, under the circumstances, viz., that he should issue to the signalmen at each end of the portion of railway intended to be used as a single line written instructions of what he proposed to do. He is provided with printed forms for this purpose.

If he had done so the signalman at Robin Hood junction would have known and would have been prepared for what he was required to do, viz., to turn the down passenger train from Manchester from the up road to the down road at his junction.

The Clifton junction station-master, when he called to the Robin Hood signalman as he passed his cabin on his way from Robin Hood to Clifton junction, told him that he was not to let anything pass on the up road until he returned; these instructions were obeyed, and when the passenger train from Manchester was signalled to Robin Hood on the block instruments the signalman expected that it was running on its proper line. He could not be aware at the time from anything that had occurred which line was blocked and which line was to be used.

The guard in charge of the train of empties is to blame for having signalled to his engine-driver to push back without first ascertaining that the whole train had been drawn clear over the points, and that the points were right for the train to be pushed back over them.

The accident was the result of this man's neglect and of the Clifton junction station-master's neglect to carry out the Company's instructions as to the precautions that are to be taken when it becomes necessary to work single line.

I have, &c.,

F. H. Rich,
Colonel R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 28th November.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade,
(Railway Department),
Whitehall, 8th November 1876.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 1st instant, the result of my inquiry into the circumstances connected with the collision which occurred on the 30th ultimo, at Brierfield station, near Burnley, on the Lancashire and Yorkshire Railway.

In this case the 3 p.m. cattle train (running only on Mondays) from Skipton to Salford was run into by the 6.45 p.m. passenger train from Colne to Manchester.

Two butchers who were travelling in the van of the cattle train were killed on the spot; a third was so seriously injured that he died on the 4th instant; and two others were more or less injured.

In the passenger train, nine passengers were injured, though none, it is hoped, seriously. The driver and fireman of the passenger train were severely shaken.

In the cattle train the van was completely demolished, and 4 waggons badly damaged, 12 beasts being killed.

In the passenger train the engine had its smoke-box end stove in, its funnel knocked off, and its buffers and buffer-beam broken; but there was no damage to the tender or carriages.

Brierfield is the first station north of Burnley, on the line between Burnley and Colne, the station next north of it being Nelson, distant one mile. There are sidings on both sides of the station, the point and signal levers having been all recently concentrated and interlocked in a new raised cabin, situated at the Burnley end of the down platform, close to the level crossing of a public road, the gates of which are worked from the cabin. The level crossing is a very wide one, extending over two lines of rail and a warehouse siding. The only signals to which it will be necessary to refer in this report are the down home and down distant-signals. The down home-signal is 270 yards from the signal-cabin, and on the Nelson side of it; and, on account of a curve, a cutting and an over-bridge (called a tunnel) 70 yards in length, is visible to an approaching driver for a distance of only 220 yards, *i.e.* from a point 10 yards inside the tunnel mouth. The down distant-signal is about 900 yards from the cabin, from which it cannot be seen. It is now electrically repeated. It is visible from Nelson station. This signal is a new one, and has been only in use about a month, when it replaced an old one about half the distance out. The electrical repeater was not, however, in operation at the time of the collision, and was brought into use (together with other telegraphic arrangements for working the block system) only on the 4th instant. The line rises from Nelson towards Brierfield on a gradient of 1 in 660, which terminates 15 yards on the Brierfield side of the tunnel, when it commences to fall towards the station on a gradient of 1 in 330.

The collision occurred at a point 70 yards on the Nelson side of the home signal, or 140 yards from the tunnel mouth, where the van of the cattle train was standing, it having been possible for the driver to see this van from a point 25 yards from the tunnel mouth, or for a distance of 165 yards.

The block system was not in force at the time of the collision, but preparations have been for some time in progress for establishing it over this part of the line, and it will be very shortly in operation, the signalman being now engaged in practising with the instruments.

The following is the evidence bearing on the collision.

1. *Thomas Lyon*, signalman about one month at Brierfield, previously goods porter about four months, some time before this in the service as a permanent-way man.—I was working under another signalman for a fortnight before I took charge myself. The new cabin was first brought into use about a month since. The electric repeater of the down distant-signal was put into working order only on Saturday last, the 4th instant; before that I could not tell whether this distant-signal was working or not. I came on duty at 6 p.m. on the 30th ult. for 12 hours. The cattle train arrived at 6.45 p.m. I had lowered my distant and home signals for it to come in. I put back the distant-signal lever when the train had reached the tunnel, and my home-signal as soon at it had passed inside it. I had lowered the distant-signal once before this for a passenger train due at 6 o'clock, and had put back the lever as soon as this train had passed. I had received no instructions with regard to shunting the cattle train from the station-master. The driver drew down to the cabin, and said he had three waggons to leave; and I said, "If you're sharp we can just manage, as there is about 12 minutes." There were passenger trains due both ways, one at 6.55 and another at 7.4, and there was no room in the sidings to hold the train. The three waggons were in two different places, and the driver had finished shunting, (during which operation the down signal-levers had been necessarily in the position of danger, as the crossing-points, No. 12 lever, were open,) and was just about rejoining his train, when the collision took place, at 6.57. I heard the passenger train coming, and thought there seemed too much speed on it. I had closed No. 12 points a minute or two before the collision. I heard a break-whistle just before it. I was told, after the collision, that the down distant-signal was off, and it was then thought that the defect was at the post. I had not heard of this distant-signal working badly before the collision; but I heard of its failing last Thursday, owing to the wire sticking in the pulleys. On Monday last it did not work properly, but it was probably due to the wire not being in adjustment. It has not failed since. The telegraph instruments were not in working order, though fixed on the day of the collision. We began practising with the bells some day last week. I did not see the driver and fireman at the time of the collision. I heard the beat of the cattle train somewhere above Nelson station, and accordingly lowered my signals before the driver whistled for them.

2. *Arthur Bentley*, station master at Brierfield seven months, previously station master at Broadley about 18 months.—I was standing near the down home-signal when the cattle train arrived, and was present on the ground when the shunting was going on. I felt myself justified in allowing this train to shunt, as there was a margin of 10 minutes, within which time I thought the work might have been done. The train being a special cattle train took it, according to my idea, out of the provisions of the 2nd clause of Rule 83.*

* 83. Every endeavour, consistent with safety, must be made to expedite the departure of goods trains from the roadside stations, and no delay should be permitted, unless obstruction to passenger trains may be reasonably apprehended. As a rule, passenger trains are to take precedence of cattle, goods, mineral, or ballast trains; waggons of fish and other perishable goods, and cattle, or quick goods trains, must have preference over ordinary goods trains; goods trains must have preference over mineral and ballast trains; and no cattle, goods, mineral, or ballast trains must be started from any station when passenger trains are due. This regulation, however, will be subject to modification, agreeably to the circumstances of the trains, the state of the weather, the weight of the load, and the character of the engine. Thus, a light through cattle or goods train, on a clear day or night, with a good engine, may be started before a passenger train which is due, should the latter have to stop at all the stations. Again, if from facts which may come to the knowledge of the station-master, by means of the telegraph or otherwise, the passenger train which is due may not be expected for some time, the station-master will be justified despatching the goods train, taking care, in this case, specially to warn the engineman of the passenger train, when it arrives, informing him the precise time when the goods train was despatched, and where next ordered to stop and shunt; but if a goods or mineral train should not be more than 10 minutes in advance of a passenger train subject to the foregoing modification, it must be shunted into the nearest siding, to allow the passenger train to pass.

There was no room to hold this train in the sidings, and the only alternative would have been to put it on the up road, and there a train was due at 7.4, which would have left a margin of only nine minutes after the departure of the down train. No time was lost in making the necessary shunts (three in number). I was close to the scene of the collision, and I did not see the passenger train nor hear the break whistle till just before it happened. The speed was quick, but not more so than usual. Shortly after the collision I asked the driver how he found the signals; and he said the distant-signal was off, showing a clear white light, which the fireman also maintained. I did not myself go back to see the signal, but I sent back guard Broughton to protect his train, and a messenger to Nelson to stop the down traffic. Before this, to my knowledge, the new distant-signal had not failed; but since the collision I heard on November 1st, about 11.30 p.m., driver Forrer complain about the distant-signal showing a white light, although the arm was at danger, the home-signal being on at the time. On this same night previously pointsman Latham and myself had been to the signal, and oiled and cleaned it. It was then working properly. After this complaint I went up with ganger Whiteside, and found that the distant-signal was in proper working order. The same time the following night the same driver complained that the down home-signal was off, and the distant-signal on; and I found that the home-signal had not enough weight on it, and was uot working properly. On the morning of the 2nd, at about 9 o'clock, Whiteside told me that the wire of the distant-signal had stuck in one of the pulleys, which had kept the signal off, when it ought to have been at danger,—the driver of the 8.51 train having complained of the signal being a doubtful one. This last complaint caused the pulleys to be examined and altered. Last Monday I found the signal again not working properly, as indicated by the electric repeater, which had been just fixed; that was due to want of adjustment, and it is now working properly. The sidings were all full on the evening of the 30th ultimo, but occasionally there is plenty of room. There is no siding here which will hold a train of 30 waggons.

3. *John Unsworth*, driver 10 years.—I was coming from Skipton with the 3 p.m. Monday cattle train for Salford. I left Skipton at 5.45 p.m., having been kept waiting for a train off the Midland line. I stopped last at Colne (three miles distant), and left it at 6.35 with 33 loaded cattle waggons and a break-van. When I came in sight of the Brierfield distant-signal it was off, and the home-signal also. I stopped beside the cross-over road, knowing that I had some waggons to leave. I had only two shunts to make, and no time was lost in making them, and I was just hooked on and had given my engine steam when the collision occurred; it took me quite unawares. I was pushed forward 40 or 50 yards. The train broke in one place. I went on to Burnley for assistance, and on returning saw the driver of the passenger train, who said that the distant-signal was off when he passed it. I have passed the new distant-signal three times in all, and it has then been working properly.

4. *Thomas Hamer*, goods guard 6 years.—I left Skipton at 5.45 in charge of the 3 p.m. cattle train, with perhaps 12 or 14 drovers and butchers (I knew them all by sight) in the break-van, which is fitted up for passengers. We took on one waggon of cattle at Colne, and another butcher with them,—one of those killed. We left Colne at about 6.30 with 33 loaded cattle waggons and a break-van. Nothing passed about our remaining at Colne till the passenger train had left. We did not stop at Nelson. The Brierfield distant signal showed a white light. I did not notice the home signal. The driver knew we had to leave waggons at Brierfield, and we stopped near the crossing, the van of the train being 70 yards outside the home signal. No time was lost in making two shunts, and the collision occurred seven minutes after we arrived. I was between the waggons, coupling up, when I heard the passenger train coming through the tunnel. I finished coupling, got out, and gave the driver a signal to start, when I heard the break whistle, and immediately afterwards the collision. I was coupling between the eleventh and twelfth waggons from the engine. The van and three waggons were smashed. About four of the drovers jumped out, and escaped injury. I went back to Nelson to protect my train, and on returning saw the driver of the passenger train, who said the distant signal had been off for him. I saw that this distant signal was showing a full white light as I came back from Nelson. The wreck of my train was then on the wire.

5. *James Clough*, driver about 11 years.—I started from Colne with the 6.45 p.m. passenger train for Manchester. We were three minutes late starting, waiting for the Midland train due at Skipton at 6.35. My engine was a six-wheeled four-coupled engine and tender with 5½-feet coupled wheels, cylinders 17″ × 24″. There was no break on the engine, only on the tender, which has six wheels. I was running engine first. Fireman Jackson was alone with me on the engine. My train consisted of ten vehicles. I stopped at Nelson, and we were still about three minutes late leaving it. The night was very clear and moonlight. I had not to whistle for the Brierfield distant-signal, which was off when I sighted it from close to Nelson station (about half a mile off). I saw the light first, and then the arm, which was right in the post; it was not at all a doubtful signal. My speed on passing it was about 20 miles an hour. I had passed this new signal only once before, viz., the same morning, and it was then working properly. I shut off steam on entering the tunnel, the usual place for stopping at the station; and just on getting to the tunnel mouth I saw the three van lights of the special train. I at once reversed, got steam against the engine, and whistled twice for the breaks. My fireman was at his break, but I don't know whether he got it on. I could not say whether the guard got his break on. The speed had diminished very little before we struck. We neither of us jumped off, and the blow did not feel so very heavy. I lost my hold of the reversing lever and regulator, and fell back. I was not seriously hurt, but am still off duty. I am not in the habit of whistling at the whistle board near the distant signal, as there have been so many complaints about whistling.

6. *William Jackson*, fireman 3½ years.—I work regularly with Clough. We stopped at Nelson after leaving Colne. We had not to whistle for the Brierfield distant-signal, which was off when we sighted it, soon after leaving Nelson. We passed it at a speed of about 20 miles an hour. We did not whistle at the whistle board, it not being the custom to do so by night, as it is intended to give warning for the level crossing. The driver shut off steam about the entrance of the tunnel; we both saw at the same time the red lights of the cattle train just as we emerged from the tunnel. I had time to apply my break a little, and then we struck. I was knocked about, but am not much the worse now. I have not yet returned to duty. The speed was not much reduced. The driver tried to reverse, and gave the break whistle twice. I did not notice the arm of the distant signal so much as the light, which was a very clear white one.

7. *Stephen Broughton*, passenger guard nine years.—I left Colne at 6.49 p.m., four minutes late, detained by the Midland train being late. The train consisted of 10 vehicles, including two vans. I was travelling in the front van, the only guard. I had three carriages coupled to the van with Newhall's breaks. I left Nelson at 6.55, five minutes late, having lost a minute. I did not hear the driver whistle for the Brierfield distant signal, and I did not see this signal, as I was

busy with my parcels. The collision took me unawares. I had heard no break whistle till just as we struck. I was at my break, having gone to it at the entrance of the tunnel for the ordinary station stop. The speed then was about 20 miles an hour. I was a bit shaken, but have not had to leave work. There was no damage to the van or carriages. The collision occurred about 6.58, the train being due to leave Brierfield at 6.55.

8. *Richard Whiteside*, foreman platelayer from Brierfield towards Burnley for 1½ miles.—After the collision I went through the tunnel, and saw by its back-light that the Brierfield distant-signal was not at "danger." I found this was owing to the wreck of the train lying on the wire, and I cut the wire in consequence. Some days afterwards my brother told me that he found the distant-signal wire striking between a pulley and its sheave.

9. *Joseph Whiteside*, platelayer.—On Thursday last, in consequence of the complaint of driver Chandley that the Brierfield down distant-signal was neither off nor on, pointsman Latham and I examined the wire, and we found the wire jammed between the pulley and bracket in one place under the platform. On pulling it out the signal worked all right. I had not seen the signal before examining the wire.

10. *James Oram*, signal-fitter, in the employment of Messrs. Saxby and Farmer.—I have been in charge of the new work at Brierfield station. I have had my attention drawn to the distant-signal not working properly. Two or three dozen pulleys of a different description from the usual ones had been fixed in doing the work, the small ones being $\frac{7}{16}$ inch thick, and the proper ones $\frac{9}{32}$ inch thick, the jaw of the brackets being $\frac{3}{4}$ inch wide. I had not noticed that these pulleys were so small as to allow the wire ($\frac{1}{2}$ inch) to jam between the bracket and the pulley. I did not see the jamming of the wire last Thursday. The small pulleys have now all been replaced by proper ones.

11. *Herbert Quinny*, signalman on duty at goods-yard cabin, Nelson.—I have frequently noticed the working of the Brierfield distant-signal. I have seen it pulled off and go on. As far as I have seen the signal it has worked properly. I did not notice the signal on the evening of the collision until after the tail-lights of the passenger train disappeared from my view, when I noticed that the signal remained off.

Mr. Johnson, Messrs. Saxby and Farmer's district superintendent, informed me that the small pulleys had been cast for a special purpose, and had been sent from London improperly mixed up with the larger ones; that the pulleys are now being examined at all the places where new work has been recently done, and altered if necessary.

There was a sharp frost on the evening of the collision after a warm day.

This collision, which resulted in such fatal consequences, is to be primarily attributed to a failure in the working of the Brierfield down distant-signal, which there is good reason to believe was showing "all right" to the driver of the passenger train, although it ought to have been at "danger" according to the position of the lever in the locking-frame. The signalman on duty is not to be blamed for this, as he could not see the back light of this distant-signal, and had not at the time any means of knowing (by the electric repeater since fixed) how the signal was working. It is not possible to fix the precise cause of the signal failing. If it was really *completely* off, as stated by the driver, fireman, and the Nelson goods-yard signalman, the failure was most likely caused by the wire having become jammed (as actually occurred a few days afterwards) between one of the (too small) pulleys and its frame. If *not completely* off, the failure might have been owing to the contraction of the wire from the contraction of the temperature on a frosty evening after a warm day.

The failure of the distant-signal shows how important it is that every signal out of sight of the signalman should be supplied with a trustworthy means of informing him whether the signal acts in accordance with the lever working it.

The fixing of the pulleys too small for the frames they worked in betokens want of proper care both on the part of the fitter superintending the work at Brierly and on the part of the person who issued these pulleys from the factory in London.

Though the driver of the passenger train was, of course, misled by finding the Brierfield distant-signal off for him, and was justified in concluding that the road was clear for him at any rate up to the home-signal, I do not think he is free from blame in having approached a station where the sight is so obstructed, at so high a speed as to have struck the van of the cattle train standing only 70 yards outside the home-signal, at a speed of some 20 miles an hour.

There was want of judgment on the part of the Brierfield station-master in allowing the cattle train to commence shunting when there was a margin of only 10 minutes between its arrival and the time of departure of the passenger train. Though there was not sufficient siding accommodation to have put the cattle train out of the way, he could have had it moved forward to the cross-over road on the Burnley side of the station, and have then been guided by circumstances as to what to have done with it; as it was, the passenger train would have been delayed some five minutes had it been punctual, and had no collision occurred.

It is almost needless to observe that had the block-system been in operation the collision would have been prevented.

Its effects would also have been much mitigated had the continuous breaks been under the driver's control.

For many years past the memorandum of requirements, issued from time to time by the Board of Trade to railway companies, has contained the following (among other) precautions recommended in the working of railways, viz.: "When drivers or other "persons are permitted to travel with goods or cattle "trains, suitable vehicles should be provided for their "accommodation near the front of such trains." Had this precaution been attended to in the present instance, the fatal consequences of this collision would in all probability have been avoided.

I understand that the Company obtained powers in 1875 for acquiring additional land at Brierfield for the purpose of improving the goods accommodation. No unnecessary time should be lost in providing this increased accommodation, in order that, so far as possible, the necessity of shunting on the main line may be avoided; and, in so doing, the opportunity should be taken for widening the up-platform, which is now far too narrow, and for removing the warehouse siding from the level-crossing.

I have, &c.,

C. S. Hutchinson,
Colonel, R.E.

The Secretary,
(*Railway Department*),
Board of Trade.

Printed copies of the above report were sent to the Company on the 28th November.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
SIR, *23rd October* 1876.

IN compliance with the instructions contained in the order of the 13th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the double collision that occurred on the night of the 6th October at Ardwick junction.

No passengers were hurt.

There are four lines of rails from this junction to Manchester. Two are used by the Manchester, Sheffield, and Lincolnshire Railway Company, and two by the London and North-Western Railway Company. There is a double junction between these four lines, and a double junction between the two London and North-Western lines of rails, and the Lancashire and Yorkshire branch to Miles Platting, which comes in at Ardwick junction. The points and signals connected with these junctions are interlocked with each other, and are worked from a raised signal cabin close by, which is called Buxton Street junction cabin. There are other junctions about 150 yards east of Buxton Street cabin, at which the points and signals are also interlocked and worked from a raised cabin close by. This latter cabin is called Ardwick old junction cabin.

The Longsight goods yard is about a mile east of the old Ardwick junction, and the Manchester, Sheffield, and Lincolnshire and London and North-Western Ardwick station platforms are to the east of Buxton Street cabin and about opposite to the old Ardwick junction cabin.

On the day in question a goods train, which consisted of a tender, engine, and 25 waggons, with a breaksman on the last waggon, arrived from Longsight at Ardwick station, on the London and North-Western main line, at about 7.34 p.m. It was stopped there by signals for a few moments, when the junction signals at old Ardwick and at the Buxton Street cabins were lowered, and the train proceeded on its way towards London Road station, Manchester. Almost immediately after the driver had passed the Buxton Street junction he felt a shock, by which his engine was detached from his train, and he knew that something had run into him; he pulled up, and found that the waggons near the tail end of his train had been run into by a London and North-Western train, which came off the Lancashire and Yorkshire branch from Miles Platting. This train consisted of 25 loaded waggons, which were drawn by an engine with the "tender" in front. There was a breaksman on the last waggon. As the driver of this train was approaching Buxton Street junction he found the signals against him. He stated that he was running at a speed of seven or eight miles an hour at the time, and that he did his best to pull up, but as he was on a falling gradient of 1 in 105, and that the rails were greasy, he could not do so before he ran into the train of empty waggons which was passing Buxton Street junction at the time. Four waggons of this last-mentioned train, which were the last but two in the train, were thrown off the rails, and two of them fell against the parapet wall of the viaduct, and knocked down about 25 yards of the wall, which fell over into the street below. The engine of the train that came off the Lancashire and Yorkshire branch was slightly damaged.

There are two signals on the Lancashire and Yorkshire branch to Miles Platting to protect the Ardwick junction, and also two sets of safety points on these lines; one signal is about 80 yards from the junction cabin, but close to where the branch up line crosses the main lines from Ardwick to Manchester, and the further one, which is an auxiliary or distant signal, is about 200 yards from the junction cabin. The first of these signals is worked by the signalman in Buxton Street cabin, and is interlocked with the points; but the one which is furthest away, which is called a stop signal, and appears to be so considered, has not been connected or worked at all, but always stands at danger. The safety points have not been connected or worked up to the present time. The driver of the loaded goods train stated that he had nearly brought his train to a stand when his tender struck the train of empties.

At the same time that the train of empties left Ardwick station on the London and North-Western lines of rails, a Manchester, Sheffield, and Lincolnshire passenger train, which consisted of an engine and tender, a break-van, four passenger carriages, and a second break-van with the guard in charge, was standing at the Manchester, Sheffield, and Lincolnshire Ardwick station. The Buxton Street signals were lowered for it to proceed, and this train started for Manchester just before the collision between the two goods trains occurred close in front of it. The Manchester, Sheffield, and Lincolnshire station platform, from whence the passenger train started, is not above 150 yards from the place where the branch line on which the goods train was approaching crossed the Manchester, Sheffield, and Lincolnshire main lines. The driver of the passenger train, as soon as he perceived the goods train coming off the branch, reversed his engine and did his best to stop, but he struck the goods train at a speed of one or two miles an hour, and knocked three goods trucks off the rails. The engine of the passenger train was slightly damaged, but none of the carriages were damaged or left the rails. A few chairs of the permanent way were broken.

There is a very large traffic both on the Manchester, Sheffield, and Lincolnshire and on the London and North-Western lines at Ardwick junction. In addition to all the Manchester, Sheffield, and Lincolnshire and the London and North-Western trains, there are some Midland and Great Western and North Staffordshire passenger trains, which work through this junction, and all the goods traffic which has to be transferred from the Lancashire and Yorkshire to the Manchester, Sheffield, and Lincolnshire and to the London and North-Western Railways has to be brought off the Lancashire and Yorkshire branch through Ardwick junction. The Lancashire and Yorkshire branch falls on a steep gradient towards the Manchester, Sheffield, and Lincolnshire and the London and North-Western lines. This makes this overcrowded spot more difficult and dangerous to manage than it otherwise would be. All the lines are on a high viaduct, and the whole of the goods traffic has to be worked across the passenger lines. This cannot be done without a great deal of risk to the passenger trains, which are continually passing. These Companies ought to endeavour to make other arrangements for transferring the Lancashire and Yorkshire goods and mineral traffic to their respective lines. I recommend that the Lancashire and Yorkshire branch up auxiliary signal near Buxton Street cabin, which is commonly called a stop signal, should be connected to the Buxton Street signal cabin and always worked, as, although it showed danger and the driver of the goods train was not aware at the time of the accident that it was never taken off, the signal cannot be considered a proper one if not worked. It is desirable that until better arrangements are made for transferring the goods traffic, that this dummy or stop signal should be used as the junction "home" signal, and that the "home" signal at Ashton Road Bridge should be slotted, or that a second arm should be put on the Ashton Road Bridge signal-post to act as a "distant" signal from Buxton Street cabin at Ardwick junction.

With reference to the safety points I would recommend that the switch on the line to Miles Platting should be put in an effective state at once, but as

these lines are now occasionally used as passenger lines I would recommend that the one on the up line, which is a facing point, should be taken off. The safety points were put in when these lines were used for standing goods waggons upon. No safety points which are facing points should be left on a line which is used for passenger traffic.

The accident was caused by the neglect of the driver of the London and North-Western train from Miles Platting, who overran the signals at Ardwick junction, which were at danger against him. This man has been in the Company's service nine years; he has acted for the last two as an extra driver. At the time of the collision he was labouring under some disadvantages. He had no means of turning his engine, and was therefore obliged to run tender first, and could not use his sand boxes as efficiently as if his engine had been in front of the tender. He had no break-van on his train, and was dependent upon the breaksman who was riding on the last waggon. This breaksman, when he thought that something was wrong, jumped off just before the collision. He stated that he applied his waggon break lever before he jumped off. It appears that the goods and mineral trains are usually run over this Lancashire and Yorkshire branch without break-vans, whereas it is very desirable to have a large proportion of break power on all trains coming down from the Lancashire and Yorkshire branch into the Manchester, Sheffield, and Lincolnshire and London and North-Western passenger lines at Ardwick.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

F. H. Rich,
Colonel, R.E.

Printed copies of the above report were sent to the London and North-Western, the Lancashire and Yorkshire, and the Manchester, Sheffield, and Lincolnshire Railway Companies on the 22nd December.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(*Railway Department,*)
13, *Downing Street, 3rd November* 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 13th ultimo, the result of my inquiry into the circumstances connected with the collision that occurred on the early morning of the 10th ultimo, between an excursion train and a goods train, at the south end of Bletchley station, on the main line of the London and North-western Railway.

About forty passengers have complained of injuries received on this occasion, and one servant of the railway company was also hurt; but none of the injuries received are believed to be of a serious nature. The engines of the two trains, break-van, four carriages, and three waggons were more or less damaged.

There are four lines of railway approaching Bletchley station from the south, two for fast and two for slow traffic. When the third line of railway from London to Bletchley was first opened for traffic, many years since, it was intended to be solely used for up goods traffic, but this was subsequently changed, and the third line was made available also for passenger traffic occasionally.

The fourth line of railway was sanctioned to be opened for passenger traffic last April, and from that time there have been two lines for slow traffic, but principally used for goods and mineral trains, on the north side of the railway, and two lines for fast passenger traffic on the south side of the railway.

These four lines of railway merge into the two main lines at the south end of Bletchley station, the down slow line, after crossing the up fast line on the level, joining the down fast line, about 40 yards south of No. 1 signal-box, which is rather more than 100 yards south of the south end of the station platform.

The entrance to the station from the south is protected by two down home-signals for the fast, and two down home-signals for the slow lines, placed side by side 145 yards south of the signal box No. 1, one of each of these down fast and slow line signals being used for the platform siding line, and the other two for the down through road through the station. Besides the down home-signals for the fast and slow lines, each down line has a distant-signal worked from, and 1,048 yards south of, No. 1 signal-box; these down distant-signals are not interlocked with their respective home-signals, but the home-signals are properly interlocked with the points and other signals, so that if their indications are not disobeyed by the drivers, or set aside by other arrangements, collisions could not take place.

In the fork between the main lines and the branch lines to Bedford and Cambridge there is another signal-box, No. 3, probably 300 yards north of No. 1 signal-box.

The fast lines south of Bletchley station are worked on the absolute block system; but although the requisite instruments have been provided, the slow lines are worked on the permissive, and not on the absolute, block system.

The traffic through the station-yard is not worked on the absolute block system, and the down home-signals for the fast and slow lines, worked from the south signal-box No. 1, are slotted from No. 3 signal-box, and cannot therefore be taken off by the signalman at No. 1 signal-box for a train to pass, without the consent of the signalman in No. 3 signal-box, the down home-signals at No. 1 box thus virtually become the down distant-signals for No. 3 box, and practically in working the absolute block system north of Bletchley station, which at present re-commences at No. 3 signal-box, these down home-signals are not permitted by the signalman in No. 3 signal-box to be taken off by the signalman in No. 1 box until the former has received "line clear" for the previous down train from Denbigh Hall, the next absolute block telegraph station, two miles north of Bletchley station.

Hence it has, according to the existing signal arrangements, been found necessary to sanction down trains being permitted to pass these down home-signals, while standing at danger, on the driver receiving a hand-signal, by a green lamp or green flag from the signalman in No. 1 signal-box, in accordance with Rule No. 275.

I should further state that almost immediately after the down fourth or slow line was opened for traffic, the down distant-signal for the slow line was directed to be kept always at "danger," and not taken off, to indicate when the signals and points were all right for a down train on the slow line to run through the station without stopping; and when I visited the signal-box I found that it was blocked at "danger" by a piece of wood.

The evidence of the Company's servants who were concerned in this collision is as follows:—

Henry Willis, 5 years an engine-driver and 14 in the service of the London and North-western Railway Company, states: "that he was driving engine No. 1,047, "on the night of the 9th and 10th October, attached "to a return excursion train from London to Wolver-

" hampton: that he left Euston at 11h. 45m. p.m., " the proper time, stopped at Willesden, Watford, " and Tring: that he was about five minutes late on " leaving Tring, and on first coming in sight of the " Bletchley fast line down-signals, on which line he " was running, he found them on at 'danger' " against him: that he sounded the whistle, and " both signals were taken off: that the distant-signal " was taken off before he passed it, and he might be " running about 15 miles an hour when he passed it: " that he did not see any other down signals off, " except those for his own train: that as he was " passing the distant-signal he saw the back lights " on the break-van of a train that was on the down " slow line: that he could not tell whether it was in " motion or not, but he thought it was standing " outside waiting for him to come in: that he kept " running on, the signal being right for him to " proceed, and he had passed the fast line down " home-signal before he saw that the other train was " in front, or that he had any warning: that after " he had passed the home-signal the signalman in the " box shewed a red light from his hand-lamp: that " he was running with the steam off, and when he " saw the red light he pulled the reversing lever " back and put steam on the reverse way, and the fire- " man applied the tender-break, but he had not time " to whistle for the guard's break; and he might " be running about five miles an hour when he ran " into the engine of the other train, at the crossing " where the down slow approaches the down fast " line: that his engine and tender and the front " break-van were thrown off the rails, and his engine " was considerably damaged, but it did not run above " 20 yards before it stopped: that the home-signal " for the down slow line was at 'danger' as he passed " it: that he cannot say whether the other train was " in motion when his engine struck the other engine, " and he does not know whether any other vehicles " in his train were off the road: that the collision " took place at 1h. 25m. a.m., and that he and his " fireman did not jump off before the collision " occurred."

Thomas Hodson, fireman to Henry Willis, confirms the engine-driver's statement, and says, "that the " other train was in forward motion when his " engine struck the other engine."

William Merry, front guard of the excursion train, 12 months on the London and North-western, and 11 years on the Great Western Railway as guard, states, "that as they approached Bletchley they were " about five minutes late, and they found the " signals on at 'danger' against them: that the " driver blew the whistle, and the signals were " taken off: that he was not aware that anything " was wrong until the collision actually took place, " when they were running from four to six miles an " hour: that he was in the front van which was " thrown off the rails, and he had to get out of his " break through the window, as the end of his break " was up against the tender: that he does not think " any of the carriages in his train were thrown off the " rails: that he noticed that the down home-signal " for the slow line was on at 'danger' when he got " out of his van."

Henry Holt, breaksman in charge of the excursion train, breaksman since last November, states, "that " his train consisted of 15 coaches and 2 vans, one " at each end of the train, and he rode in the rear " van: that they were six minutes late when they " left Tring, and when the driver whistled for the " Bletchley signals they were pulled off before they " reached them: that they were running at from " 15 to 18 miles an hour when they passed the " distant-signal: that it was a very clear night: that " he was not aware that anything was wrong until " the collision occurred at 1h. 25m. a.m., at which time " they might be running about six miles an hour: " that the front van next the tender was thrown off " the rails and damaged: that the down home-signal " for the slow line was on at 'danger' at that time: " that there were five coaches next to the front van, " which were fitted with continuous breaks, but there " were none so attached to his van."

Thomas Troughton, signalman, eight years in the service of the London and North-Western Railway Company, and nearly six at Bletchley station, states, " "that he came on duty at 10 p.m. on the night of the " 9th instant: that the down traffic on the fast line is " worked on the absolute block system, but the " traffic on the down slow line is worked on the " permissive system: this line was opened for traffic " last March or April: that no record is kept in his " signal-box of the running of trains, and that it has " not been so kept during the last six years that he " has been there: that he got the 'Be ready' signal " from Stoke Hammond (two miles off) block tele- " graph signal-box, for the 11h. 5m. p.m. down goods " train from Camden, a few minutes after 1 o'clock " a.m.: that he accepted the signal on the down " slow line instrument, but did not take off the " signals for that train to run through: that the " 11.5 p.m. down goods train engine stopped a little " outside the down home-signals: that he was unable " to send on the 11.5 p.m. down goods train, in " consequence of the 10.20 p.m. up coal train from " Rugby to Oxford having been signalled from " Bletchley No. 3 signal-box: that just before the " 11.5 p.m. down goods train arrived he received a " telegraph slip from the telegraph office in Bletchley " station that the down excursion train had left " Tring at 1.3 a.m., and the 11.5 p.m. down goods " train had just stopped, when the coal train from " Rugby for Oxford arrived: that the coal train ran " past his box on the up fast line, in order that it " might be shunted back to the down platform " siding: that while the coal train was passing from " the up fast to the down fast, he received the 'Be " ready' signal for the down excursion train, which " would have been given from Stoke Hammond box " when the excursion train had been signalled on to " the Stoke Hammond signalman from Chelmscote " Bridge box: that the 11.5 p.m. down goods train " having, as a general rule, to run into the down " platform siding, he knew it would be in the way of " the excursion train which was going to the same " platform, and he kept the 11.5 p.m. down goods " train back, in order to let the excursion train pass: " and when the excursion train was signalled on " from Stoke Hammond, the coal train was drawing " out of the down siding platform on to the Oxford " branch: that as soon as the coal train was clear on " to the Oxford branch, he lowered the down fast " line distant-signal for the excursion train, but not " in consequence of the driver having whistled for it: " that he did not hear the driver whistle for the down " fast line signals, and the 11.5 p.m down goods " train was stationary at the time: that about when " the excursion train was passing his down fast " distant-signal, he lowered the down fast home- " signal for the platform line: that when he went to " put the down distant-signal for the fast line on, he " saw the green buffer light of the goods train engine " foul of the down fast line, and the excursion train " was then very near his down home fast line signal: " that he instantly got his hand-lamp and turned on " the red light, and waved it violently to the drivers, " and shouted: that the goods engine at the time " seemed to be stationary: that when the collision " occurred he blocked the lines in both directions, " and advised the signalman at Stoke Hammond of " what had occurred, and told him not to let any- " thing pass on either down line: that the collision " occurred about 1.25 a.m.: that he had not given " any signal whatever for the down goods train to " proceed into the station: and it has not been the " practice for drivers of similar down goods trains " to run into the station, without receiving any

" signal: but they have been called forward by " hand-signal, green light, or flag occasionally: " that the down distant-signal for the slow line has " not been used almost the whole of the time since " that line was opened for traffic: that it has been " blocked by a piece of wood, but he does not know " by whose orders this was done, but he believes " that this signal has been kept at danger in order " to bring down trains on the down slow line forward " steadily: that sometimes there are one, two, or " three trains following each other, having to do " work at the north end of the station, and they have " an order to let trains pass which have work to do " at the north end of the station, and as the signals " at his box are slotted from the north box, they " cannot be taken off until "line clear" has been " received from Denbigh Hall, the next absolute " block signal-box north of Bletchley, the down home- " signals at the south box becoming virtually the " down distant-signals for the north box."

George Smith, engine-driver, seven years in the service of the London and North-western Railway Company, states, "that he was the driver of the " 11.5 p.m. down goods train from Camden to " Bletchley: that he had an engine and tender and " about 35 waggons, including the break-van: that " he left Camden 15 minutes late: that he was due " at Bletchley at 1.5 a.m., and stopped at Bletchley " about 1.18 a.m., the signals being on against " the train: that the engine came to a stand at the " south side of the down home-signal for the slow " line on which he was travelling: that about five " minutes after he came to a stand he received a " green light from the signalman's box, at which " time the down home-signal for the fast line had not " been taken off for the excursion train: that he has " run other trains on the same line: that his train was " intended to be broken up at Bletchley: that he has " been called forward from the same spot by hand-lamp " or green flag: that there was no other train on the " opposite line when the green light was shown, and " he was not aware that any other train was approach- " ing Bletchley at the same time: that in consequence " of seeing this green light, he then moved ahead, and " had got across the up road, when on turning round " he saw a white light coming down the fast line, " which might be about 200 yards outside the home- " signal when he first saw it, and he also saw that the " down home-signal for the fast line had been taken " off: that as soon as he saw the white light he " reversed his engine, so as to get back clear of the " down fast line, but before he could manage to do " so he was run into by the other train: that he does " not know at what time the collision occurred, but " it would be five or six minutes after he had come " to a stand at the home-signal: that his engine was " not thrown off the rails, but the tender was after " his engine had pushed the other one off the road: " that about two of the trucks next the engine in " his train were also off the rails: that the con- " necting rods and the framing of his engine were " damaged, but none of the trucks were broken: that " his train was moving backwards when the collision " occurred: that the green light was not swung " to and fro, but simply shown: that he could not " see anyone at the time in the signal-box, as it was " very dark: that it was shown from the south end " of the box which faced him."

George Powles, fireman to George Smith, states, " that the signals were against them as they ap- " proached Bletchley station, and the engine stopped " about an engine length outside the home-signal, " about 1.20 a.m.: that he was putting fat into the " cylinders and did not see the signals taken off, and " did not see any hand-signal given: that his mate " called out 'They are right for us,' and then he " got on to the foot-plate, and went to change the " lamps on coming off the slow line on to the main " line, and his train had just started when he was " going to change the lamps, and as he was coming " back from the head of the engine his mate called " out for him to jump: that he does not know why " his mate had moved ahead: that he did not look " for nor see any green light, and he did not see " the fixed signals."

John Tompkins, breaksman of the 11.5 p.m. down goods-train, states, "that he is a porter, and was " acting as breaksman on the night of the 9th instant: " that his train consisted of 33 waggons and a break- " van at the tail of the train: that they left Camden " at 11.20 p.m., and stopped outside Bletchley signals " about 1.18 or 1.20 a.m., the signals being on against " them: that he did not see any signal given to the " driver to draw ahead, and thought he was only " drawing ahead to get level with the signals: that " he saw a red light from the cabin: he applied his " break, and was knocked down and hurt in the " forehead: that he did not see any green light at " all: that the collision occurred about 1.25 a.m., " but he does not know what happened to his train: " that his train was still drawing ahead when the " excursion train passed him, and he then applied " his break: that he was not sensible that his van " was being backed when the collision took place."

Alfred Tyler Mumford, district locomotive superintendent, states, "that George Smith is a very good " driver, and has hitherto borne a good character: " that he has been working at Walsall until the last " six or eight months, and he selected him as a likely " man to do well on the main line: that he considers " that the down home-signals at the south end of " Bletchley station being slotted from the north " signal-box, and thus prevented from being taken " off to allow trains to enter the station, is objection- " able, and that it would be far more desirable to do " away with the slotting and to place down distant- " signals, worked from the north box, under the " down home-signals, so as to do away with the " necessity for using hand-signals."

The special regulations under which the excursion traffic is worked on this section of the London and North-western Railway, are shown in the accompanying notice respecting this particular excursion train, marked A.

From the preceding statements, it is apparent that the collision was caused by the engine-driver (Geo. Smith) of the 11.5 p.m. down goods-train, who, had in obedience to the fixed signals brought his train to a stand-still close to, but outside of the down-home slow-line signal, and who, having stood there about five minutes, says that he received a green light from the signal box as a signal for him to pass the down home slow-line signal and to proceed into Bletchley station yard, and that he at once drew ahead and thus fouled the down fast line. It does not appear from any other evidence, that any green light was intentionally shown to him, nor admitted that any green light was shown to him, as a signal to proceed. It was suggested that this driver mistook the lowering of the down home fast-line signal, which was taken off by the signalman as soon as the coal train for Oxford had got clear of the down fast line for the excursion train to enter the station, for the down-home signal for the slow-line, but this suggestion is in direct opposition to the driver's statement, which I do not see any reason for doubting.

It will also be seen that the locomotive district superintendent, Mr. Mumford, objects to the reciprocal slotting of the home-signals from No. 1 and No. 3 signal boxes, as it necessitates the use of hand-signals for calling trains past the fixed signals into the station-yard, and he considers that it would be far better to do away with this slotting of the home-signals, and to place distant-signals, worked from these two signal-boxes, under the home-signals, as this arrangement would permit the home-signals to be taken off to admit trains to the station-yard to do such work as might be required, and at the same

time do away with the necessity for using hand-signals.

I entirely agree with the locomotive district superintendent.

I do not understand why proper record books are not kept in connexion with the working of the block system in the signal-box at Bletchley, nor on what grounds the down distant-signal for the slow-line worked from No. 1 signal box is always kept at "danger." Of course it is perfectly useless as a signal, since it is never changed from "danger" to "all right," to give any information to the engine-drivers as to the line being blocked at the junction, or "clear" to run through, and it might as well be removed altogether if it is not to be used.

The Company issue regular notices as to the running of excursion trains (see paper A), which they designate "Special trains", and the station-masters &c. are duly advised as to the running of such trains. The Company's regulations also require the engine-drivers to look carefully to their working time-tables, but it will scarcely be credited that these notices are not supplied to the engine-drivers of the regular trains, who are the most interested of all the servants of the Company in knowing when and where to look out for these excursion trains.

The driver of the 11.5 p.m. down goods-train has been dismissed the Company's service, but in my opinion the collision must be set down to the Company's faulty arrangements for working excursion traffic, and to the use of hand-signals at Bletchley south cabin.

I have, &c.,
W. Yolland,
Colonel.

The Secretary,
(Railway Department,)
Board of Trade.

General Instructions for Working Special Trains.

1. The attention of station-masters, guards, signalmen, and others, is particularly directed to the safe and regular working of the special trains as set forth in this time-table, and to the necessity of keeping other trains clear of them. Several of the goods and mineral trains are inserted in the monthly working time-table as passing over the line at about the same hours that the special excursions will be running, and care must be taken to shunt those trains in sufficient time to leave the line clear for the special excursions to pass. Station-masters are instructed to acquaint all persons concerned, at their respective stations, that these trains may be expected.

2. The departure of the special trains must be immediately announced by telegraph from station to station where the instruments are in use, and the important junction stations must be apprised in the same way as is done with the ordinary passenger trains.

3. The train preceding the special train in all cases to be targetted.

4. If the passengers are numerous it may be necessary to divide the special trains; a good look-out must therefore be kept for the red board or extra tail lamp, which will be attached behind the last vehicle of the first train, should there be another train following; in such cases, trains which have shunted for the first portion must remain in the sidings until the second portion has passed, unless it is known by telegraph that the second portion is late.

5. The drivers, guards, and breaksmen of *following* trains are to be informed by the clerk or foreman on duty at each station where they stop how long the special train is in advance of them, and at what stations it will call.

6. Station-masters at the principal stations must provide a sufficient number of carriages to strengthen the trains as far as may be necessary to meet the requirements of the traffic, and they are to inform Mr. Hargreaves, of Stafford, by wire, after the departure of each special train, the number of vehicles attached, and what stock of carriages remains on hand.

7. No passenger train must run more than 20 miles without stopping, unless fitted with the "cord apparatus" for communication between the passengers and guards. The guard in charge of each train will be held responsible for seeing that this instruction is carried out.

8. Carriage Labels.—Whenever it is necessary to use paper labels, they must only be placed upon the quarter-lights of the carriages.

9. A sufficient supply of roof-lamps ready trimmed must be provided to ensure all the trains, ordinary and special, being properly lighted. Mr. Bore will arrange accordingly.

10. Station-masters at ticket-collecting stations must provide additional collectors, and make such arrangements as will prevent the trains being unnecessarily detained at the ticket-platforms.

11. The loading of passengers into excursion and other special trains should be commenced at one end of the train, the doors being unlocked only as more seats are required, so that any unnecessary carriages may be detached.

No train exceeding 19 vehicles is to be sent with less than three guards, a guard's break-van being placed at front and rear, and a break-carriage or break-van in centre of the train for the middle guard.

No train is to exceed 25 vehicles; if more than that number of vehicles are required they must be divided as nearly as possible in equal parts, and proceed by two trains, the lightest train being dispatched first. The first train carrying a special signal will denote whether the train is divided or not.

On some sections of the line special instructions exist further restricting the weight of the trains, and where such are in force they must be strictly adhered to.

12. Experienced guards, thoroughly acquainted with the road, must be appointed to work the trains.

13. Guards working special trains must not leave the station on arrival at destination without authority of the station-master, and must report themselves to the station-master at the place from which they are to return at least an hour and a half before their train is due to start, in order that they may render any assistance the station-master or foreman may require, and see that their trains are properly lamped, labelled, signalled, &c.

The guards of all passenger trains, ordinary or special, are instructed to take care that the windows of unoccupied compartments are kept closed.

Note.—The guards in charge of special trains must send a copy of their journal to each of the superintendents over whose districts the train travels, and a special report to the superintendent of the district the train started from on the following points:—

1. Whether the carriages were too few or too many.
2. Whether the times for starting and returning were suitable.
3. Whether the day was fine or wet, and what other reasons may have led to the trip being a failure or success.
4. Whether all coaches were properly lighted.

The report to be made out on completion of the trip.

When an inspector accompanies a special train, it will also be his duty to report to his district superintendent upon the arrangements generally.

J. L. Vaughan.
W. Sutton.

District Superintendent's Office,
Euston Station, October 5th, 1876.

(S.D.—No. 127.)

Station-masters are requested to send to this office, a return of the bookings by each special train immediately after its departure.

LONDON AND NORTH-WESTERN RAILWAY.

Southern Division.

NOTICE OF SPECIAL TRAINS and other Arrangements.

From stations and districts to and from which excursion passengers are booked by the following trains, also for the dates at which the tickets at high and low fares are available, as also for the ordinary trains by which excursion passengers are allowed to travel, see small bills.

The attention of station-masters, guards, signalmen, and others, is particularly directed to the safe and regular working of the special trains as set forth in this time-table, and to the necessity of keeping other trains clear of them. Several of the goods and mineral trains are inserted in the monthly working time-table as passing over the line at about the same hours that the special excursions will be running, and care must be taken to shunt those trains in sufficient time to leave the line clear for the special excursions to pass. Station-masters are instructed to acquaint all persons concerned, at their respective stations, that these trains may be expected.

Monday, October 9th.

No. 1.

Train from Wolverhampton, Walsall, Birmingham, Leamington, &c., to London. (*Returning same night at* 11.45 *p.m., and on Friday, October* 13*th, by ordinary train, at* 6.0 *p.m.*)

Arrive at	Rugby	6.55 am.
Leave	Rugby	7. 0 „
Arrive at	Blisworth	7.35 „
„	Bletchley	8. 5 „
„	Tring	8.33 „
„	Watford	9. 0 „
„	Willesden Junction	9.25 „
„	Euston	9.40 „

Travel on slow line, Tring to Willesden.

The guards from Wolverhampton to work through to Euston.

No. 2.

Return from London to Leamington, Birmingham, Wolverhampton, and South Staffordshire stations.

Leave	Euston	11.45 p.m.	
Arrive	Willesden	11.57 „	
„	Watford	12.20 night.	
„	Tring	12.50 „	
„	Bletchley	1.20 a.m.	
„	Blisworth	1.50 „	
„	Rugby	2.30 „	
Leave	Rugby	2.33 a.m	
Arrive	Coventry	2.53 „	
Leave	Coventry (for Birmingham)	2.55 „	
Arrive	Birmingham	3.30 „	
Leave	Birmingham	3.35 „	
Arrive	Monument Lane	3.40 „	
„	Smethwick	3.48 „	
„	Spon Lane	3.52 „	
„	Oldbury	3.56 „	
„	Dudley Port	4. 3 „	
„	Tipton	4. 8 „	
„	Deepfields (collect Tickets)	4.14 „	
„	Wolverhampton	4.25 „	

The guards working No. 1 train on Monday, October 9th, will return with this train.

It is important that this train should run to time. Every endeavour must be made to keep a clear road for it.

Printed copies of the above report were sent to the Company on the 16th November.

LONDON, CHATHAM, AND DOVER RAILWAY.

Board of Trade,
(Railway Department),
SIR, 13, *Downing Street, 3rd November* 1876.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 20th ultimo, the result of my inquiry into the circumstances which attended a slight collision, between a passenger train and an empty carriage, at the Victoria station of the London, Chatham, and Dover Railway, that occurred on the 13th ultimo, and of a slight accident to a Midland passenger train which subsequently got off the rails at a pair of facing-points, whose connecting rods had been damaged and bent by a carriage having been thrown off the rails when the collision took place.

No person complained of having been injured at the time of the collision, but subsequently one passenger has complained of having been hurt.

The evidence of the Company's servants is as follows:—

William Beal, signalman at the Hole in the Wall, 12½ years in the service of the London, Chatham, and Dover Railway Company, states "that he came on "duty at 9 p.m.: that about 10.35 the shunter (Savage) "asked him to allow a shunt to be made into No. 10 "line, and then another to back into the station-yard: "that at about 10.37 he gave him a signal to make "the shunt, as he had previously set the points "leading into No. 10 line right to make the shunt, "and he asked for a signal from the yard-box for "permission for the pilot-engine to go back into the "station yard, and as soon as he received this per-"mission from the yard-box he signalled to the "driver of the pilot-engine to set back into the yard, "having previously altered the points by No. 27 "lever: that one coach was kicked back into No. 10 "line, but he does not know what coach it was: "that the pilot-engine and break-van then went back "into the station-yard: that a signal was then "received from the yard-box, about 10.40, that the "10.40 p.m. Crystal Palace down passenger train "was waiting to come out, and he gave the clear "signal to the yard-box for it to come, and he lowered "the bracket-signal for the down maine-line for the "train to proceed: that he had not to set any points, "before he lowered that signal, and he did not know "that the vehicle which had been shunted into "No. 10 line was approaching the points moved by "No. 27 lever: that he looked before he lowered "the down main line bracket-signal to see that all "was clear: that he was on the look out for the "Crystal Palace train, and saw, as it was passing "under the bridge, that it had the proper head-lights, "and at the same time he became aware that some-"thing was wrong, but did not know what it was, as "the head-lights were obscured, and he heard a "slight crash: this occurred about 10.42 p.m.: that "the proper signal was exhibited for the Crystal "Palace train to come out: that he observed that "one coach was thrown off the rails and on to its "side against a coach that was on the local siding "line: that shortly after 11.0 p.m. he received a "signal from the yard signal-box that the 11.0 p.m. "down Midland Passenger train for Kentish Town "was waiting to come out: that in consequence of "the regular down road being blocked by the col-"lision that had taken place between the down "Crystal Palace train and the carriage which had "been shunted into No. 10 line, he had arranged "that the down Midland train was to come out "from the station on the in road or up local road, "and thence by a through crossing to the down main "departure road, but it had previously to be shunted "back towards the station before this could be done: "that he had not to shift any points for this Midland "train to come out, as their normal position would "be right for the train to come out, and he showed

" the Midland train a white light with his hand-lamp, " and as it was coming out, when the engine reached " the points moved by No. 26 lever of a cross-over " road from the up local to the up main line, the " engine got off the rails: that he did not know at " the time why the engine got off the rails, but on " examination afterwards he found that the con- " necting rods between his box and the points moved " by No. 26 lever had been damaged and bent by " the vehicle which had been thrown off the rails by " the Crystal Palace train: that nothing of this " damage was apparent in his box when he gave the " hand signal for the Midland train to come out."

Richard Bennett, signalman on duty in the yard box, 10¾ years in the Company's service, states, " that he came on duty at 9 p.m., and that he " signalled the 10.40 down passenger Crystal Palace " train out at 10.39, and it left at its proper time; " and just as the train passed his box it came to a " stand-still, but he does not know what happened " to it: that some time after 11 o'clock he asked " for permission for the 11.0 p.m. down Midland " train to leave: that the signal was acknowledged, " and a white light was shown at the 'Hole in the " Wall' signal-box: and the train then left, and " pulled up a short distance beyond his box, the " engine having got off the road about two minutes " after it left the station."

William Metcalfe, engine-driver four years in the service of the Company, and 18 years altogether a driver, states, "that he had No. 105 engine (tank) in front " of the Crystal Palace 10.40 p.m. down passenger " train on the night of the 13th October: that he " got a signal to leave at the proper time, as soon as " the pilot engine got into the yard and clear of the " line on which he was going out, No. 6: that his " train consisted of nine vehicles; and just as he was " crossing from No. 6 to No. 10 line, the fireman " called out 'Hold on,' and immediately the engine " struck a composite carriage which was on No. 10 " line, knocked it off the rails, the leading wheels " first, and then it fell over on to its side against a " carriage which was standing on the line next to " the 'Hole in the Wall': that neither his engine " nor any carriage in his train were thrown off the " rails: that he thinks he was travelling about " 10 miles an hour when the collision took place: " that he had shut off the steam and was reversing " the engine when the collision took place, about " 10.42: that the footplate of his engine was bent, " and the iron buffer plank was also bent at the " corner, but no damage was done to the carriages " in his train: that he had not seen the composite " carriage before the collision took place."

Vincent W. Hill, out-door superintendent, states, " that he got to the spot about 12.30 a.m., and at " that time he found that the Midland tank-engine " of the 11.0 p.m. down passenger train was still off " the road near to No. 26 points: that he examined " the connecting rods between these points and the " 'Hole in the Wall' signal-box, and found that " they had been damaged, and that the facing points " stood partly open, and the Midland engine ap- " peared to have got astride of them: this would " not have been known in the 'Hole in the Wall' " signal-box until an examination of them had been " made: that no complaints of any person having " been injured were made that night, and only one " person has since complained: that he saw the " shunter (Savage) that night, and he admitted that " he had omitted to secure the composite carriage " which had been shunted into No. 10 line, but " says he saw it as he passed it when opposite the " yard box, and thought it was then stationary."

From the preceding statements it appears that about 10.35 p.m. on the night of the 13th October, the shunter on duty (Savage) in the Victoria station yard applied to the signalman in the "Hole in the Wall" signal-box for permission to shunt an empty composite carriage from the carriage-siding line into No. 10 local line, and afterwards to shunt the pilot-engine, with a break-van in front of it, from the same carriage-siding into the station-yard. The composite-carriage was in front of but not coupled on to the break-van in front of the pilot-engine; and when the signalman had given permission to make the first shunt, the composite carriage was kicked along No. 10 line, and left unsecured. The "Hole in the Wall" signalman then applied to the signalman in the station-yard signal-box for permission for the pilot-engine and break-van to shunt into the station-yard. The permission was given, and the pilot-engine and break-van passed into the yard, and the down main-line became clear for an outgoing down train.

From the "Hole in the Wall" signal-box to the facing-points leading into No. 10 local line northwards, a distance of 60 yards, the line rises on a gradient of 1 in 800 towards the station; from thence along No. 10 local line it is level for 40 yards; thence it is on a rising gradient of 1 in 156 for 40 yards, and thence it is on a rising gradient of 1 in 278 for 60 yards.

As soon as the pilot-engine with the break-van in front had got clear of the down line, the signalman in the yard-box applied for permission for the 10.40 p.m. Crystal Palace down passenger-line to leave, and the signalman in the "Hole in the Wall" signal-box having given that permission, the Crystal Palace train started, and was travelling at about 10 miles an hour as it approached the points leading into No. 10 local line, at the same time as the composite carriage, (which had been shunted into it a short time before, and had been improperly left by the shunter without having been secured,) was running back along the short falling inclines towards the points, and there came into collision with the engine of the Crystal Palace train.

The composite carriage was knocked off the rails by the engine of the Crystal Palace train, thrown over on to its side, and knocked against a third-class carriage which was standing on the adjacent carriage-siding. Both carriages were a good deal damaged, and some damage was also done to the engine of the Crystal Palace train.

This collision was entirely due to the neglect of the shunter in having failed to secure the composite-carriage when it was shunted back into No. 10 line. I did not see this man, as he had been dismissed from the Company's service, but I understand that he fully admitted the mistake he had made. He is said to have been a very good useful man.

Again, a short time after 11.0 p.m. the signalman in the yard signal-box applied to the signalman in the "Hole in the Wall" signal-box for permission for the 11.0 p.m. down Midland passenger train from Victoria station to Kentish Town to leave, and, permission having been given, the Midland train was proceeding by an unusual route out of the station, in consequence of the collision which had just taken place having blocked the down road, and it had reached a pair of facing-points of a cross-over road for connecting the up main with the up local line when the engine dropped off the rails, in consequence of the connecting-rods that work these facing-points with the lever in the "Hole in the Wall" signal-box having been damaged by the vehicle that was thrown off the rails by the previous collision, and had left the facing-points not properly closed for the line on which the Midland train was running. The signal-man in the "Hole in the Wall" signal-box was not aware when he gave permission for the Midland train to leave that anything was wrong with those points; and it seems it did not occur to him to examine those points after the collision had taken place, and before he gave permission for the Midland train to depart.

I have, &c.,

The Secretary,
(Railway Department),
Board of Trade.

W. YOLLAND,
Colonel.

Printed copies of the above report were sent to the Company on the 16th November.

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REPORTS

OF THE

INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT

TO THE BOARD OF TRADE,

UPON

CERTAIN ACCIDENTS

WHICH HAVE

OCCURRED ON RAILWAYS

During the Month of November,

1876.

(PART EIGHTH.)

Presented to both Houses of Parliament by Command of Her Majesty.
February 1877.



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GREAT-EASTERN RAILWAY.

13, *Downing Street,*
SIR, 16*th November* 1876.

IN compliance with the instructions contained in your minute of the 11th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 3rd instant, near the Devonshire-Street goods-station on the Great-Eastern Railway.

In this case, an engine and 20 goods-waggons, which had been shunted out of a siding on the south of the main lines to the up-main-line, and was waiting for a passenger-train from Liverpool-Street for Brentwood to pass it, was set back through a cross-over-road on to the down-main-line as soon as the train for Brentwood had gone by; but the train for Brentwood having been stopped by signals at the Canal-Road signal-cabin on the east of those sidings, the shunting goods-train was backed into the tail of it. No vehicles in either train left the rails, but two carriages and two break-vans were slightly damaged. Six passengers in the Brentwood train have complained of injury.

Description.

There are two signal-cabins to which it is necessary to refer in this report, viz., the Canal-Road signal-cabin on the east of the Devonshire-Street goods-station, and the Devonshire-Street signal-cabin on the west of that station. These two cabins are about 500 yards apart, and the Devonshire-Street signal-cabin is about 1,000 yards on the east of the Bethnal-Green junction. In this cabin there are 13 levers, of which three are spare levers; one of these levers is used for working the points of the cross-over-road between the two main-lines; and another lever for the connecting-points of the sidings on the south of the main-lines. Block-telegraph-instruments for both directions, and a clock, are supplied in this cabin. In the Canal-Road signal-cabin there are 10 levers in a locking-frame, of which three are spare levers; and one of which is used to slot the home-signal of the Devonshire-Street cabin, and to work a disc in that cabin. There are block-telegraph-instruments in this cabin, but no speaking-instruments.

The passenger-train in question consisted of a tank-engine, four passenger-carriages, and two break-vans. It left Liverpool-Street at 7.13 a.m., and ran through without stopping to the Canal-Road signal-cabin. The engine-driver there brought it to a stand at the home-signal, and about an engine-length from the cabin.

Evidence.

The guard of this passenger-train, Charles Boyce, was riding in the rear van. He took off his break, looked round, and saw the goods-train approaching, not more, he thinks, than a minute after his train had come to a stand. As soon as he saw the goods-train coming he re-applied his break, and he remained in his van when the collision occurred; he worked his train forward after the collision to Brentwood, it was rather foggy, but he could have seen the goods-train for a distance of three or four telegraph-posts, but he did not notice it until it was within two yards of his van.

The goods-train consisted of an engine and tender, and 20 goods-waggons.

The engine-driver, Thomas Thompson, had brought these 20 waggons out from the siding on the south of the main-line to the up-line, by direction of the shunter, Francis Gibson. He was standing on that line for about three minutes before the train from Liverpool-Street for Brentwood passed him. As soon as that train had gone by he could see the signalman in the cabin pulling over the points for the cross-over-road, and he saw him come to the window and hold up his arm as a signal for the train to set back. He accordingly set back his train over the cross-over road to the down-main-line, pushing the 20 waggons in front of him along that line; and, in looking over the side of the engine, he saw the shunter, Gibson, coming running back and holding his arms up. He therefore reversed his engine and applied his steam, but he could not stop his train until the waggons had come into collision with the passenger-train.

The fireman, Alfred Howlett, states that the evidence of his engine-driver is quite correct. He saw the signalman hold his arms up from the cabin to tell them to go back, but he did not see the shunter. He gave a signal to his mate, and he saw his mate reverse the engine and apply the steam after receiving the signal from the shunter.

The guard of the goods-train, William Atkins, was riding on the engine. He ought to have been on the last truck, but he trusted to Gibson, the shunter, who was riding at the tail of the train. He could not have ridden on the last truck as it was a high truck, loaded with empty boxes. He was down on the low-level goods-station when the train started back, and ran up to join his engine on the high level.

The shunter, Francis Gibson, gave the signal to the engine-driver to go out on the main-line. He saw the Brentwood train pass, and then the goods-train set back; and, seeing that no guard was on the last truck, and thinking that there ought to be somebody at the rear of the train, and not being able himself to get on the last truck, he got on the last truck but one, and rode back upon it. The last truck was a goods-truck loaded up above the sides with returned empties, and double-sheeted. There was no means of getting on it or riding on it, and he therefore rode in the empty waggon next to this truck; and the truck so loaded with empty packages obstructed his view as he was setting back. Whilst the train was setting back he heard a whistle, and on looking round to see what was the cause of this whistle, he saw round the side of the truck next to him the passenger-train standing at the Canal-Road cabin. He jumped out of the empty truck, and rushed towards the engine-driver, holding up his arms as a signal for him to stop; he thinks the goods-train was going at a speed of six or seven miles an hour when the collision occurred.

The signalman on duty in the Devonshire-Street cabin, Thomas Wright, heard the engine of the goods-train whistling up to cross over from the south sidings to the sidings on the north of the main-line about 7.10 or 7.15 a.m. As soon as he was able to allow the goods-train to come out on the up-line, in readiness to shunt across to the down-main-line when the passenger-train for Brentwood had gone by, he pulled over the cross-over-road points, and held up his arm as a signal to the engine-driver to cross to the down-line. When the engine had gone three or four yards past his cabin he noticed the disc worked from the Canal-Road cabin moving over. Having seen the Brentwood train go by at full speed, he thought the disc turned over from the Canal-Road cabin applied not to the Brentwood train but to the goods-train about to be shunted towards the Canal-Road cabin. He had not made any signal, however, to the Canal-Road cabin in regard to the goods-train about 7.10 a.m. He received a call from the Canal-Road cabin for an up train by the shaking of the needle, and he blocked his needle over to indicate that there was a train at his cabin, but there was nothing to tell the signalman in the Canal-Road cabin that a train was about to proceed towards that cabin.

The signalman in the Canal-Road cabin, Jonathan Wright, received at 7.22 a.m. a call by the needle being shaken for the Brentwood train, and that train

reached his cabin at 7.23 a.m. He kept his home-signal at danger because the line was not clear at Old Ford. He turned his distant-signal to danger before the Brentwood train came to a stand, and the lever by which he turned his distant-signal to danger would work the disc in the Devonshire-Street cabin. According to the practice of working the signals in the Devonshire-Street cabin, the signalman there had no right to allow a train to be shunted back towards the Canal-Road cabin, when the distant-signal from the Canal-Road cabin and the disc in the Devonshire-Street cabin were at danger.

Conclusion.

This collision has been caused, on a misty morning, by a goods-train being wrongly backed, in the course of shunting, against a passenger-train properly stopped at a signal-cabin. It appears that there is a considerable amount of shunting across the main-line in the neighbourhood of the Devonshire-Street goods-yard, and that until alterations have been carried out, and more convenient accommodation provided, such shunting cannot be avoided although the passenger-trains in both directions run very frequently. The signalman in the Devonshire-Street cabin was no doubt anxious to hurry on his work, which he is obliged to carry through, and by which he is often placed in considerable difficulty; but he ought not to have allowed the goods-train to be shunted back along the down-line after receiving from the Canal-Road cabin an intimation that there was some obstruction near that cabin by the disc in his own cabin being turned over to danger.

The guard of such a goods-train ought, as a rule, to be in the rear of it whilst being backed along a passenger-line, and to be looking out; but there was on this occasion a waggon at the tail of the train on which the guard could not ride, and which obstructed the view of the shunter as he rode in place of the guard on the last truck but one of the train. The remedy principally required for the avoidance of accidents of this description is a re-arrangement of the goods-yard, so as to avoid the shunting of goods-trains on the main-passenger-lines. Meanwhile it would be better to instruct the signalman in the Devonshire-Street cabin not to allow any train of this description to be shunted back along the down-line towards the Canal-Road cabin without first obtaining distinct permission from the signalman in the Canal-Road cabin.

I have, &c.,

The Secretary, H. W. Tyler.
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 30th November.

GREAT EASTERN RAILWAY.

Board of Trade,
(Railway Department),
13, *Downing Street, 21st November* 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 15th instant, the result of my inquiry into the circumstances which attended the collision that occurred on the 10th instant, at the Enfield station of the Great Eastern Railway, between a passenger train and a train of empty carriages from which the passengers had just got out.

Two passengers complained of having been injured on this occasion, and some slight damage was done to a portion of the rolling stock.

Enfield station is a terminal one, with a single island platform between the up and down main-lines.

Its approach from the south is protected by home and distant signals worked from a signal box which is about 75 yards north of two down-signals, placed on the same post, one above the other, and 132 yards south of the south end of the island platform.

A down distant-signal is placed about 800 yards south of the down home-signals.

A cross-over road, with facing-points in each direction, connects the down main-line opposite the signal box with the up main-line, near the south end of the island platform, for the purpose of allowing down trains to run along the line lying on the eastern as well as the western sides of the island platform; the upper arm on the home-signal post locking the facing points opposite the signal cabin right for a down train to run along the main down line to the western side of the island platform, and the lower arm locking the facing-points right for a down train to be diverted from the proper main down line to the up main line at the eastern side of the island platform.

The platform is upwards of 120 yards in length clear of the cross-over road, for engines to run round their trains.

The evidence of the Company's servants in this case is as follows:—

George Walker, signalman for about nine weeks, and four months previously engaged as a porter, in the service of the Great Eastern Railway Company states, "that he has only been employed as a signal-" man at the Enfield signal box: that he came on " duty at 2 p.m. on the 10th November: that the " 7.40 p.m. down passenger train from London to " Enfield, and due there at 8.20, was let into the " station at 8.30 p.m.: that he lowered the auxiliary " and the top arm of the home signals, and when the " train had passed his box he put up the auxiliary " and the home-signals both to danger: that he " received the 'be ready' signal from Edmonton for " the 7.55 p.m. down passenger train from London " while the 7.40 p.m. down train was just passing " the auxiliary signal, and he gave 'line clear' for " the 7.55 p.m. train after the 7.40 p.m. down train " had got alongside of the station platform, and after " he had put up the top home-signal to danger: that " he accepted 'train on line' from Edmonton for the " 7.55 p.m. down passenger train, and again took " off the top home-signal for the train to run into " the same side of the platform as the 7.40 p.m. train " had gone into, and this he did through a mistake: " that he had forgotton into which platform he had " turned the previous train: that the 7.55 p.m. train " passed his box about 8.35 p.m., but he is not " certain about the exact time, as the clock was out " of order—it was too fast,—and the train passed at " about the usual speed: that the driver of this train " had not to whistle for the signals, as they had been " taken off for him to pass into the station: that " there had been a previous mishap two days after " he had taken charge of this signal box, when he " had through mistake moved a pair of facing points " while an empty train was being shunted, whilst " passing over them, there being no locking-bar to " prevent him from making such a mistake, which " he did in the hurry of the moment."

William Mills, engine driver 27 years, (10 years on the Great Eastern, and previously on the Great Northern Railway,) states "that he was driving " No. 164 tank-engine in front of the 7.55 p.m. " down passenger-train from Liverpool Street: that " his train consisted of an engine, 11 carriages and " two break-vans, with two guards: that he was

" running just about his proper time, and when he " approached Enfield station he found the signals " were at 'all right:' that the top home-signal was " lowered for him to enter the station, and he did " not find out that he was running in on the wrong " road until he saw that he was about two engine " lengths from the last vehicle of the 7.40 p.m. " down passenger-train which was standing along- " side of the passenger platform: that, as near as " he could guess, he was running at the speed of " about five miles an hour: that he was running " with the steam off, and had just time to reverse " the engine and to turn the steam on the reverse " way, when the collision occurred, about 8.35 p.m.: " that neither his engine nor any carriages in his " train were thrown off the road, and no damage was " done to his engine, and he does not know that any " was done to the carriages in his train: that the " van at the tail of the 7.40 train was damaged, but " he does not know the nature of the damage nor " the number of the carriages in the other train: " that neither he nor his mate were hurt."

It should further be stated that prior to the arrival of the 7.55 p.m. down passenger-train at Enfield station, one of the porters had removed the tail lights from the rear vehicle of the 7.40 p.m. train for the purpose of putting them on at the other end of the train, which would be the rear-part of an up-train when it quitted the station.

It also appears from the evidence, that the collision was caused by the mistake of the signalman on duty in having set the points right for the 7.55 p.m. down-train to run along the main down-line to the western side of the island platform, and lowered the down home signal to lock these points in that position, entirely forgetting that he had, five minutes before, admitted the 7.40 p.m. down passenger-train along the same line, and to the same side of the platform.

The signalman was an inexperienced man, who had nothing to guide him on a dark night as regards lights on the platform or train then standing alongside of it, as the signal box is at a considerable distance from the platform, and he was thus working under considerable disadvantages.

No other servant of the Company is to blame.

Island platforms at terminal stations where there are only two passenger-lines should, in my opinion, be avoided, as facing-points are unnecessarily presented to both in-coming trains on the down-line, and to out-going trains on the up-line; and it would be far better in all such cases to have up and down platforms with the requisite lines for the engines to run round their trains, and to shunt the latter from the down to the up-line, and thus avoid the danger which is inseparable from facing-points.

I have, &c.,

W. Yolland,
Colonel.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 1st December.

GREAT EASTERN RAILWAY.

Board of Trade,
(*Railway Department*),
13, *Downing Street, 28th November* 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 15th instant, the result of my inquiry into the circumstances connected with the collision that occurred on the 11th instant, between a passenger train and a ballast train, on the Great Eastern Railway, between Manor sidings and Stamford Hill station.

Two passengers and one servant of the Company are stated to have been injured, but the injuries received are believed to be slight.

The break-van of the ballast train and eight waggons were knocked off the rails, and more or less damaged, and the engine of the following passenger train was slightly damaged.

In this case, a ballast train was slowly travelling between Manor sidings, north of Stoke Newington station, 4¼ miles from Liverpool Street station, and Stamford Hill station, 5 miles from Liverpool Street station, when it was overtaken and run into by the 5.45 a.m. down passenger train from Liverpool Street, which had improperly been permitted to proceed beyond the Manor sidings signal box, owing to a mistake on the part of one of the signalmen employed.

The traffic on this branch is worked on the absolute block system. There are sidings off the down line north of Stoke Newington station at Manor sidings, and there is an absolute block telegraph signal-box at the Manor sidings, which is closed at night but in use during the day; this signal box is distant about 630 yards from Stoke Newington. The down home-signal at Manor sidings, which serves as the down distant-signal for Stamford Hill station, is about 330 yards south of Manor sidings signal-box. The line is straight from Stoke Newington northwards for a length of 15·2 chains; it then curves to the right for half a mile on a radius of 30 chains, and is then straight into Stamford Hill station. The curved portion is entirely in cutting, so that the view along this part of the line is very limited. The evidence in this case is as follows:

John Carter, ballast inspector, 8 years on the Great Eastern Railway, states, " that he came on duty at " 4 a.m. on the 11th November at Stratford: that he " was on the engine of a ballast train at Stoke New- " ington, which consisted of 24 trucks and two break- " vans, and the whole of the trucks were all loaded " when at Hackney Downs, and partly loaded when they " reached Stoke Newington: that the trucks contained " ashes, not ballast, for covering up the ends of the " sleepers, and his orders were to distribute these " ashes between Rectory Road and Stoke Newington, " and between Stamford Hill and the Seven Sisters: " that they reached Stoke Newington at 6 a.m., just " pulled up, and asked if the signalman had gone on " to the (Manor siding) signal-box, and the answer " was that he had gone on: that on going down the " yard towards the box he saw the signalman nearly " against the box, and he told the signalman that he " wanted to shunt for the first down passenger train " (return workman's train), and he said 'All right': " that he jumped off the engine at the siding points; " and after the signalman had opened the points, he " called the train back, and it got into the siding, " clear of the main line, about three or four minutes " past six o'clock, and his train remained there till " 6.43; at that time an up coal train had arrived, " and in order to clear the up road for an up passen- " ger train, it was necessary that it should be shunted " across, and put into the sidings, its proper destination: " that there was not room in the sidings for the " ballast train and the coal train at the same time, and " the signalman told him that they would have to get " out of the sidings, and he replied 'All right,' and " went to his engine, and, in the meantime, the signal- " man had opened the points, and he gave the driver " a signal to draw out on to the down main line: that " as he was on the step of the engine he saw the " Stoke Newington station-master coming down the " yard towards the signal-box, and he said to the

" driver of the ballast train engine that he would run " back, see the station-master, and ask what was amiss " with the down passenger train, which had then been " due for 45 minutes: that he told the driver to draw " down towards Stamford Hill, and to wait there " for him: that his train started at 6.43 from the " siding, and he went back to the station-master, and " asked what was amiss with the down train, who " replied 'he did not know': that the coal train had " not drawn across at this time, but had drawn " ahead over the points, and was just ready to " cross: that he told the station master that they " were to unload between Stamford Hill and the " Seven Sisters, and he said 'All right, look sharp.' " This conversation took place between the signal-box " and Stoke Newington station, and the signalman " was not present, but in his box: that he then went " on, and rejoined his train about 6.50: that he " had just got on to the step of the engine when he " saw the passenger train coming through the bridge, " and he jumped off, and the collision occurred about " 6.52 by his time: that there was an interval of " about seven or eight minutes between the time of his " train leaving and his rejoining it: that when he saw " the passenger train coming, the steam was on, and " the driver whistled before the collision took place, " —hardly a second before: that when he rejoined " his train it was just moving ahead, and he does not " know whether it had stopped or not: that he had " no orders to throw out cinders between Stoke New- " ington and Stamford Hill, and if he had had such " orders he would not have gone back to the station- " master: that they were not throwing out ballast " when he was walking after his train, that he saw: " that a ganger of the name of Cook was in charge of " the men in his train, who numbered about 45: that " he had told the signalman that the cinders were to " be thrown out between Stamford Hill and the Seven " Sisters, but he had not told him that any were to be " thrown out between Manor sidings and Stamford " Hill: that when the collision took place, neither the " passenger train engine nor the carriages were " thrown off the rails, but the rear break-van and " seven trucks of the ballast train were thrown off " the rails by the collision, and four or five of the trucks " were broken: that he does not know when the " signalman at Manor siding signal-box gave 'train " on line' to Stamford Hill for the ballast train."

John Outlaw, signalman at Stoke Newington for 4 and 5 years, and 13 years in the service of the Great Eastern Railway Company, states, "that he " came on duty at 5 a.m., and went to the Manor " siding signal-box about 5.50 a.m.: that he opened " the box in the usual manner, by testing the instru- " ments, and he received 'train on line' for the " ballast train from Stoke Newington about 5.55 a.m.; " and on its approaching his box, he gave it on to " Stamford Hill; and, as it passed his box, the " inspector on the engine called out that he wanted " to shunt for the first down train, which is due at " Stoke Newington at 6.3, and to pass his box at " 6.5.: that he put the down signals at danger, and " shunted the train into the siding off the down line; " and he then cancelled the telegraphic message to " Stamford Hill, which he had given, and it was " acknowledged in the usual way: that he then gave " 'line clear' back to Stoke Newington: that after " a time he passed two up trains (two up workmen's " trains), and the inspector wanted to get away with " his ballast train, and then the goods (coal) train " arrived, but the inspector told him that he wanted " to get away before the coal train arrived, and when " the latter came it was necessary that the ballast " train should get away, as there was not room in " the sidings for the two trains: that he then gave " six beats to Stoke Newington (the occupation signal) " to block the down main line, and Stoke Newington " repeated the six beats, showing that he accepted " the signal; and he then gave Stoke Newington " 'down train on line,' thus blocking the down line: " he then put all his down signals on at danger, pulled " the points over ready for the down ballast train to " go on, and gave the proper departure signal (three " beats) to Stamford Hill, for the ballast train to go " on, but he does not know when he gave it, as he " had no clock in the box: that he gave a signal by " hand to the driver of the ballast train to leave: " that the departure signal (three beats) was answered " by the Stamford Hill signalman giving him 'train " on line' on the face of the instrument: that he then " shunted the goods (coal) train across from the up " line into the siding, and after the lapse of 8 or " 10 minutes, as he had not received 'line clear' " from Stamford Hill for the ballast train, he rang " the 'attention signal' (five beats), and the Stamford " Hill signalman acknowledged it by answering by " the same number of beats, and after about two " more minutes, seeing the down train standing at " Stoke Newington, he rang Stamford Hill up again " by the same number of beats, and Stamford Hill " answered him again by five beats, and after a slight " pause by giving 'line clear;' that he then gave " 'line clear' at once to Stoke Newington, but he " does not know what time it was then: that he then " pulled the signals off the down road and received " 'train on line' from Stoke Newington for the " passenger train: that on its approaching his box, " he gave Stamford Hill 'train on line,' two beats: " that the train passed, travelling at its usual speed; " and after it got out of sight, he heard a crash, but " did not hear any whistle before it occurred: that he " did not give 'line clear' back to Stoke Newington " for that train, as he waited until it had been cleared " from Stamford Hill, in accordance with instructions " which he had received from the station-master at " Stoke Newington."

William Marfitt, station-master at Stoke Newing- ton, 13 years in the service of the Great Eastern Railway Company, states, "that he came on duty at " 5 a.m., and as he was walking towards Manor " siding signal-box he met inspector Carter, who " wanted to know where the down train was, and he " told him that he did not know: that he wanted to " unload between Stamford Hill and Seven Sisters: " and he replied, Look sharp or make haste: that the " ballast train left at 6.42 a.m., and the station was " blocked at Stoke Newington at 6.40 a.m., and it " would take about two minutes for the train to get " away: that he did not hear the crash take place, " as he was shunting a goods train: that according " to the Stoke Newington block telegraph book, the " goods (coal) train reached Manor sidings by the " up main line at 6.40 a.m.: that the 5.45 a.m. down " passenger train, according to the same book, reached " Stoke Newington at 6.46, left at 6.48, and was " telegraphed on to Manor sidings at the same time, " 6.48, but 'line clear' was not received for that train " from the Manor siding."

Arthur Manning, 20 years of age last March, signalman at Stamford Hill for six weeks, previously at Clapton station as a porter for 16 months, states, "that he came on duty at 5 a.m. on the 11th Novem- " ber, and that Manor siding signalman gave him a " down passenger train for Enfield at 6 a.m., but in " about seven or eight minutes he cancelled that signal, " and the train did not arrive at Stamford Hill at all: " that at 6.42 the Manor siding signalman gave the " signal for the ballast train by three beats, and he " acknowledged it, and recorded it in the block " telegraph book: that in about five minutes after- " wards Manor siding signalman rang the attention " signal (five beats), and he acknowledged it by the " same number of beats; and after a slight pause, " Manor siding signalman again rang the attention " signal by five beats, and he then looked up at the " instrument, could not see anything the matter, and " thought he must have taken the train on wrong: " that he then looked out of the window, could not " see any train, and then he cleared the line for " another train to come on: that the 6.45, the " *altered* figures in the block telegraph book, were

" inserted in the book after the collision had taken " place, but he does not know what figures were " in the book where the 6.45 is now shewn : that " as soon as he had taken the second train on line he " saw the ballast train approaching Stamford Hill, " and he saw it before the accident took place : that " both down-signals were off for the train, and as " soon as he saw the ballast train, he knew that he " had made a mistake in giving 'line clear' for a " second train : that he thinks there might have been " an interval of five minutes between the time of " accepting 'train on line' for the ballast train and the " giving of 'line clear' for the second train : that " as soon as he found out that he had made a mis- " take, he put the down distant-signal on at 'danger,' " but the passenger train had got past the distant- " signal before he had put it on to 'danger' : that he " did not put the down home-signal on at 'danger' " until after the porter had come down and told him " what had happened."

Frederick Eyre, driver, 13 years in the service of the Great Eastern Railway Company, states, "that " he had No. 166 tank engine attached to the 5.45 a.m. " train at Liverpool Street on the 11th November, " and as he was coming out of No. 9 dock, to be " attached to the train, the bogie end (trailing end) " of the engine got off the rails at a pair of facing " points, in consequence of the points not having been " quite closed : that his engine was got on to the line " again and attached to the train, and he was ready " to start at 6.27 : that his train consisted of 13 " coaches, 2 break-vans, with 2 guards, and he thinks " there were continuous breaks on three coaches at " the rear end of the train : that on approaching " Stoke Newington station, the signals were on at " 'danger,' and he sounded the whistle, and the " semaphore signal to admit him to the station was " taken off, and he stopped at the station as usual : " that, after waiting about two minutes for it, the " starting signal was taken off, and he started about " 6.48 a.m., and as he was approaching Manor siding, " the down home-signal, which is the same as the " Stamford Hill down distant-signal, was off for him " to proceed, and it remained off until he had passed " it : that as the engine was just passing the over- " bridge, he observed the break-van of the ballast- " train ahead : that he might be running not more " than 15 miles an hour when he passed Manor siding " down home-signal, and at the same rate when he " saw the break-van : that he then whistled for the " guard's breaks, shut off the steam, and threw the " engine out of gear ; the fireman applied the engine- " break ; and he was still running at about the same " rate when the engine ran into the other train : that " his engine was not thrown off the rails, nor any " vehicle in his train : that there is a curve in the " line which prevented him from seeing whether the " break-van was on the down or up line when he first " saw it, and it took time to satisfy him that it was " on the down line : that his engine was slightly " damaged, but none of the carriages were : that the " break-van and seven or eight waggons of the ballast " train were knocked off the road, and more or less " damaged : that the collision occurred about 6.50 a.m. : " that he was slightly bruised in the head, but the " fireman was not hurt."

Nathaniel Gray, head-guard of the 5.45 a.m. train from Liverpool Street, 13 years in the Company's service, and 12 years as a guard, states, " that his train " left Liverpool Street at 6.27 a.m., or 42 minutes " late. It consisted of 14 carriages and 2 break-vans, " and he rode in the rear van with a chain-break con- " tinuously connected with the next vehicle in front : " that his train reached Stoke Newington at 6.46 a.m., " and left at 6.48, the signal being taken off for the " train to start : that they travelled at the usual rate " towards Stamford Hill, and he did not notice the " Manor siding down home-signal as they passed it : " that he was looking out for the other down signals " on the right side of the van, and he heard the " engine whistle for the breaks at the same time : " that he was knocked back, the collision taking place " at the same time as the whistle, before he had got " his break on, and before he commenced to put it on : " that he was just through the over-bridge at that " time : that he thinks they were running about " 25 miles an hour when he heard the whistle, and " the collision took place about 6.50 a.m. : that he " was not hurt, and no damage was done to his train : " that there was no time between the hearing of the " whistle and the collision taking place for any reduc- " tion in the speed : that two passengers complained " at the time of being slightly hurt : that it was a " frosty morning, and rather clear : that he did not " see the break-van of the ballast-train in front until " after the collision had occurred."

Robert Turner, fireman to Frederick Eyre, on the 11th November, 2½ years a fireman, and 4½ years altogether in the service of the Great Eastern Railway Company, states, " that he rode on the left side " of the engine which was running with the chimney " in front : confirmed the driver's statement as to " stopping at Stoke Newington and starting from " there : that the down home-signal at Manor siding, " stood at caution, as they passed it, when travelling " about 15 miles an hour : that they had passed " through the over-bridge before he observed the " waggons of the train in front, and they were still " running at the same speed : that his mate called " out to him, as he saw the waggons first, and cried, " 'Wo,' and he applied the break at once : that he " had got the break on, but was still twisting the " handle round when the collision took place : that " he does not know the exact time when the collision " occurred : that he remained on the engine."

John Hasler, under-guard of the 5.45 a.m. train from Liverpool Street on the 11th November, 4½ years guard, and seven in the Company's service, states, " that he rode in the front van, with three " carriages between the engine and his van : that " they reached Stoke Newington at 6.46 a.m., and " left at 6.48 a.m. : that he did not notice the Manor " siding down home-signal as they passed it, as he " was busy sorting his papers and parcels : that he " thinks they were running about 25 miles an hour " when the engine-driver opened the whistle, and he " looked up at once : that his van was just under the " bridge when the engine whistle was sounded, but " before he could get hold of his break he was knocked " down in the van and was hurt in the back : that " he did not notice that any diminution in the speed " had taken place before the collision took place : " that he did not look at his watch to see at what " time it happened : that there were no passengers " in the three carriages which were in front of his " van, and the doors of these carriages were all locked : " that he immediately went back to protect the rear " of his train."

Saunders Wilcocks, fireman over the men employed on the line keeping up the permanent way, 35 years in the Company's service, states, " that they left Strat- " ford at 4 a.m. and pulled up the ballast train at " Lea Bridge : that they stopped first at Rectory " Road to unload part of the train, and then they " went to Manor siding, expecting a passenger train " down, and stayed there a long while : that he rode " in the break next to the engine : that he heard the " signalman then tell inspector Carter that he must " go out of the sidings, as he was going to let a coal " train in, and he went out : that he did not hear " what instructions were given about going on, but " they went on towards Stamford Hill : that they " stopped for the purpose of unloading some cinders " between the over-bridge and Stamford Hill bridge : " that they had not properly made a start to commence " unloading when the collision occurred : that there " were 45 men in the trucks, and he had only just time

" to get them out of the trucks, when the collision took " place: that he was standing about the centre of his " train (24 trucks and 2 vans) in the six-foot space, " when he saw the passenger train coming, and he " thinks the engine was then about the over-bridge, and " he called out to the men to get out of the trucks, and " they had just got clear of them when the collision " occurred: that he had not given the driver of his " train any orders to stop for the purpose of putting " the cinders out, but if he had stopped they would " have done so, and the men had thrown some cinders " out as they were going on: that he could not say " whether the steam was on or not on the passenger " train engine when he saw it: that he did not hear " it whistle, and he could not say at what rate it was " running when the collision took place: that he " looked at his watch some few minutes afterwards " and found that it was then five minutes to seven " o'clock: that the van at the rear of the train and " about eight trucks were knocked off the rails and " very much damaged."

It thus appears that a ballast train consisting of an engine, 24 trucks, and 2 break-vans, with a party of 45 men, reached the Manor sidings shortly after 6 a.m., just as the signalman from Stoke Newington had got there and had re-opened the signal-box for the day's work. The ballast train was at once shunted into the sidings off the down line, out of the way of the 5.45 a.m. down passenger train from Liverpool Street, and this was completed three or four minutes after 6 a.m.

The signalman at the Manor siding signal-box had given "train on line" on to Stamford Hill station for this ballast train before he knew that it was to be shunted into the Manor sidings, and he had in consequence to cancel the telegraphic signal "train on line" to Stamford Hill; and this cancelling was duly acknowledged.

The ballast train conveyed cinders, which had been partly unloaded on the line between Rectory Road and Stoke Newington, and the remainder of the cinders were intended to be distributed between Stamford Hill and the next station north of it, Seven Sisters.

The 5.45 a.m. down passenger train, which consisted of an engine, 13 carriages, and 2 break-vans, with 2 guards, had been delayed in starting from Liverpool Street station in consequence of the engine getting off the rails as it was backing out of the dock for the purpose of hooking-on; and it was nearly three-quarters of an hour late.

Between 6.40 and 6.43 a.m. an up coal train, intended for the Manor sidings, reached that place, and the Manor siding signalman told the inspector with the ballast train that the ballast train would have to proceed, as he wanted to shunt the up coal train into the sidings, in order to clear the up line for an up passenger train, there not being sufficient siding accommodation to take in the ballast and the coal train at the same time.

The Manor siding signalman then telegraphed "train on line" to the Stamford Hill signalman, but he does not know at what time, and this signal was properly acknowledged. There is an entry in the Stamford Hill block telegraph book, under "Train on line" of 6.42, for this ballast train, and there does not seem to be any reason to doubt that the signal was given at that time. The Manor siding signalman then shunted the coal train into the Manor sidings; and having done so, and waited 8 or 10 minutes, as he had not received "Line clear" from Stamford Hill, he then proceeded to ring the "attention signal" at Stamford Hill, which was duly acknowledged; and after waiting two more minutes, he rang it again, and it was again acknowledged; and then the inexperienced signalman at Stamford Hill thought he had made some mistake about the train, and gave "Line clear" for a second train to come on from the Manor sidings, while the ballast train was crawling along between the Manor sidings and Stamford Hill.

The Manor siding signalman was evidently altogether wrong as to the interval of time, 8, 10, or 12 minutes, which he thought had elapsed after he had sent the ballast train on at 6.42 a.m., because the 5.45 a.m. down passenger train did not reach Stoke Newington until 6.46, and it left at 6.48, only six minutes after the ballast train had been sent forward from the Manor sidings.

I found that proper records of the times of arrival and departure, &c. were not kept in the Manor sidings signal-box, and that there was no clock in it at the time of the collision, so that the signalman there, although an experienced man, was working under a disadvantage.

There is little doubt that his repetition of the "attention" signal within so short an interval of time after the ballast train had left, caused the signalman at Stamford Hill to make the mistake of admitting a second train on the length between the Manor sidings and Stamford Hill station, which led to the collision.

The signalman at Stamford Hill, an inexperienced young hand, under the entry of 6.42, in the block telegraph signal book, had inserted the figures 6.45 over an erasure. He could not explain what had originally been entered, and it was not possible to decipher it.

On the other hand, the driver of the 5.45 a.m. down passenger train could, if he had been keeping a sharp look-out, have seen the break-van of the ballast train just before he was passing under the over-bridge referred to in the evidence, or at a distance of about 250 yards from the break-van of the train in front. But it seems clear that he was running at a much higher rate of speed than he admits (15 miles an hour); was depending altogether on the block system, and was not keeping a sharp look-out, or the effects of the collision might have been very much diminished, if it could not even have been altogether avoided.

I have, &c.,
W. Yolland,
Colonel.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 20th December.

GREAT EASTERN RAILWAY.

Sir, *London, 14th December* 1876.

I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 19th of November, at the Victoria-Park-junction station, on the Great-Eastern Railway.

In this case, the 3.55 p.m. passenger-train from the Victoria-Park station for Stratford-Bridge, consisting of a tank-engine, a break-van, and three carriages, was passing through a pair of facing-points on the east of the Victoria-Park station, when the passenger-carriage at the tail of the train left the rails. This carriage was dragged off the rails for a distance of 194 yards, until it reached a crossing, at which the wheels were again forced on to the rails. The train then proceeded forward to the Stratford low-level station, and it was not until it arrived there that the

engine-driver, fireman, or guard were aware of what had occurred. Three axle-boxes of the carriage which left the rails were then found to be broken. 49 chairs were broken, and two sleepers destroyed, in the permanent-way. Three passengers have complained of injury.

Description.

On the west of this station there is a junction between the Great-Eastern line towards Stratford, and the North-London line towards Poplar and Blackwall. The signal-cabin is on the north of the North-London Railway, and on the west of the station. On the east of the signal-cabin, and 213 yards from it, there is a cross-over-road between the up and down lines of the Great-Eastern Railway. The Great-Eastern trains between the Victoria-Park station and the Stratford-Bridge station make use of one platform only at the Victoria-Park station; and the westerly points of this cross-over-road are therefore facing-points for the Great-Eastern trains leaving the Victoria-Park station, to enable them to get to their proper line through this cross-over road on their way to Stratford-Bridge. These facing-points are not provided with a locking-bar or bolt, which are the more required, inasmuch as they are 213 yards from the signal-cabin. The tongues of the points are 15 feet long, and they have a play of fully $3\frac{1}{2}$ inches, measured from the tip of the tongue to the stock-rail. The points at both ends of the cross-over-road are worked by one lever in the signal-cabin, which lever is interlocked with the lever of the starting-signal, 63 yards from the points.

Evidence.

The engine-driver of this train, *Henry Green*, states that he started from the Victoria-Park station at 3.57 p.m., two minutes late. The starting-signal was lowered. He saw the points as he approached them. They appeared to be properly set. He did not notice anything unusual in passing through them. He did not watch his train through the points. He was not aware of anything having occurred to the train of an unusual character until he heard complaints from the passengers at the Stratford low-level station. They complained that the carriage had got off the road, and had got on again. He noticed that two of the axle-boxes were broken. After the passengers had got out of this carriage, he went forward to Stratford-Bridge, and the carriage was left there.

The fireman, *William Falsey*, has nothing to add to the statement of his engine-driver. He did not watch the train in going through the points, and was not aware of anything being wrong until they reached the Stratford low-level station.

The guard, *David Carling*, states that he was riding in a van next behind the engine. There was a tank-engine, then the break-van, and three passenger-carriages. The rear carriage was a third-class carriage. He started from the Victoria-Park station in the usual course at 3.57 p.m. He saw that the signal was lowered for the train to pass. He did not see the signal returned to "danger." He did not feel anything unusual in going through the points. He was not aware of anything unusual having occurred until he reached the Stratford low-level station. He there heard from the passengers that there was something wrong. He examined the carriage, and found that it had been off the rails. When he came back to Victoria Park station, half an hour afterwards, he looked at the points with Mr. Francis, the Stratford station-master. His object in looking at the points was to see whether he could get through them with the passenger-train. He could not ascertain any cause for the accident. He did not see any marks on the points, but he had very little time for examining them.

Henry Clark Francis, the Stratford station-master, reached the spot about 40 minutes after the accident. He made arrangements for the passengers of an up-train, after learning that the train could not pass through the points, to get to the Victoria-Park station-platform. He examined the points, and could find on them no marks of any description. He returned a second time, and made diligent examination of the points with the men sent to repair the road. Again he could find no mark on the points, and the first indication he noticed on the permanent-way was that a fish-plate, 10 feet in advance of the heel of the points, was off, and two or three chairs near it were broken. He did not notice any wheel-marks on the ballast. He noticed, further, that the permanent-way was damaged for 200 yards forward.

Alfred Linnett, foreman platelayer in Stratford yard, reached the spot about three-quarters of an hour after the accident. The road had not been touched before he arrived, as far as he knew. He found Mr. Francis, but no platelayers, on the spot. He noticed no marks on the points. The first mark he saw was 10 feet in advance of the heel of the points. The chair behind the joint was broken, and two chairs in front of the joint were broken. The fish-bolts were cut off, and one of the fish-plates was broken, and on the off-side of the cross-over-road every chair was broken. The old piece of rail tying the permanent rails together was not then in. He took his gauge, and gauged the road, and found it was perfectly right.

The station-master at Victoria-Park junction, *William Warman*, went to the points five minutes after the accident. He noticed, about 3 feet from the tip of the off-tongue a piece of ragged iron, turned up, as if by a wheel getting the wrong side of the tongue. From that ragged spot forward he traced a mark along the top of the tongue and the rail in front of it for 18 feet, until the wheel appeared to have dropped off into the ballast. He traced the wheel-marks outside of the off-rail of the cross-over-road, and the inner rail of the main line forward to the crossing, and after that he noticed the marks of four wheels on the ballast, two on each side.

Henry Jones, porter in the service of the North-London Railway Company at the Victoria-Park station, has been at that station $4\frac{1}{2}$ years. He saw the train started, and heard a rumbling noise, and heard some men calling out on the bank. He afterwards saw the train going away, apparently all right, and went to call the station-master. He went down to flag the train up again. He did not examine the points.

Frederick Clements, ganger of the length on which the accident happened, reached the spot three hours after the accident. He found the points perfectly right, and is unable to account for the carriage having left the rails. He found no marks on the points, nor any marks until he reached the joint 10 feet in front of the heel of the points. He there found the marks already referred to. He has only been on this length for seven weeks. He put the points in on the 15th of November, four days before the accident. They were old points brought from the Fork junction. He was told to put these points in by Mr. Dodd. He put the tie in after the accident, also in accordance with the instructions of Mr. Dodd, given a week before the accident.

Samuel Dodd, inspector of permanent-way for this part of the line, did not hear of the accident until the following morning. He came then, and examined the points, and could find no marks upon them. He could give no other cause for the accident than that the points were shifted while the train was passing. He had ordered the old rail used as a tie to be put in before the accident. The points were taken out of the sidings at Stratford, in consequence of a change in

the section of rail used at Stratford, and as they suited the section of rail used near the Victoria-Park station, they were put in at that spot. They were good points, although not new.

The signalman on duty in the signal-cabin, *John Harding*, states that he lowered the signal for the train to start at two minutes to four in the usual course. He saw the train leave the station. He saw a porter run along the line. He did not close his points until after he had seen the porter running along the line. When the porter came back, he asked him what was the matter. He told him a carriage had been off the line. He could not get away from his box, and he did not examine the line. New points have been put in at the other end of the cross-over-road, and new sleepers. He is quite certain that the accident did not happen through his moving the points while the train went over them. He did not put up the starting-signal until the train was out of his sight.

Conclusion.

After very careful inquiry into the circumstances of this accident, and after considering all the evidence available, I have come to the conclusion that the signalman must have worked his point-lever prematurely, whilst the train was passing the points, and that the last carriage of the train was thus thrown off the rails. Considering the position of the points, which are 213 yards from the signal-cabin, that the signalman cannot from his cabin see when a train has passed through them, and the distance—63 yards—between the starting-signal and the points, and that the points are not provided with a locking-bar, it was a mistake which a man in such a position was not unlikely, sooner or later, to commit; and I do not attach as much blame, therefore, to the signalman as if he had been more favourably situated with reference to these points.

With a view to the prevention of such an accident in future, the officers of the Company propose to make some alteration in the positions of the cross-over-roads on the east of the station. It will then be possible to bring the points used as facing-points much nearer to the signal-cabin; and when they are supplied with a locking-bar and bolt, it will be impossible for any accident of this sort to occur from any such mistake of the signalman.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 12th January 1877.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(*Railway Department,*)
13, *Downing Street,*
7th December 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 17th ultimo, the result of my inquiry into the circumstances connected with the very severe collision, between an up express passenger-train and an up coal-train, at Wolverton station, on the London and North-Western Railway, which occurred on the 14th ultimo.

About 12 passengers and six servants of the company are stated to have been injured on this occasion, and some of the number very seriously; and a considerable amount of damage was done to the rolling stock.

At the south side of Wolverton station, where this collision took place, there are sidings off both the up and down main-lines; and for the working of the traffic, into and out of these sidings, and along the main-lines, four signal-boxes are made use of, which are placed as follows:—

No. 4 signal-box, which is the absolute block telegraph box for the station, is situated north of the passenger-station platforms.

No. 3 signal-box is 536 yards south of No. 4 signal-box, and also south of the passenger-station platforms.

No. 2 is a small cabin for working gongs and discs to No. 1 and No. 3 signal-boxes, with four levers outside of it, but this cabin is not made use of at night; it is about 360 yards south of No. 3 signal-box.

No. 1 signal-box is 769 yards south of No. 3 signal-box, and it is placed close to, but at the south side of an over bridge, called the Blue Bridge.

At and between No. 3 and No. 1 signal-boxes there are three connecting lines between the up main-line and the up siding adjacent to it. The first connexion is by means of a pair of facing-points on the up main-line, opposite to and worked from No. 3 signal-box; the second connexion is by a pair of facing-points on the up-siding, called the middle points, 419 yards south of No. 3 signal-box, the lever for working these points being on the ground opposite to them, but the action of this lever is intended to be controlled by what is called a bolt lock, worked from No. 3 signal-box, the bolt passing through a hole in a slide-bar, which is connected to, and moves with the middle points, so that when this bolt is in its proper normal position, it is through the hole in the slide-bar, attached to the middle points, and locks them open to the siding, and closed against the up main-line; and an engine or train travelling southwards along this up siding cannot leave the siding while the slide-bar is thus locked. When any engine or train is required to leave this siding, and to pass out on to the up main-line, the bolt is withdrawn from the hole in the slide-bar by the signalman in No. 3 signal-box, by a pull of lever No. 36, and the middle points can then be shifted and set open to the up main-line by means of the lever on the ground, which, however, requires to be held while a train is passing through them, as they are heavily weighted (95 lbs.) and made self-acting, so as to lie open for the siding, when the lever is dropped.

The bolt is moved by a continuous stranded wire (of seven strands) that passes from the signal-box to just beyond the frame in which the slide-bar works, and thence back to the signal-box. Adjusting screws are provided on each side of the bolt for adjusting the varying length of the wire due to its expansion or contraction by heat or cold. These middle points are thus unlocked by a pull backwards of lever No. 36 in the signal-box, and bolt-locked by two or more pushes forward of this same lever; and this collision was the immediate result of what was done in No. 3 signal-box with this lever. No signal is attached to these points to show their position either to the signalman or the driver of an engine.

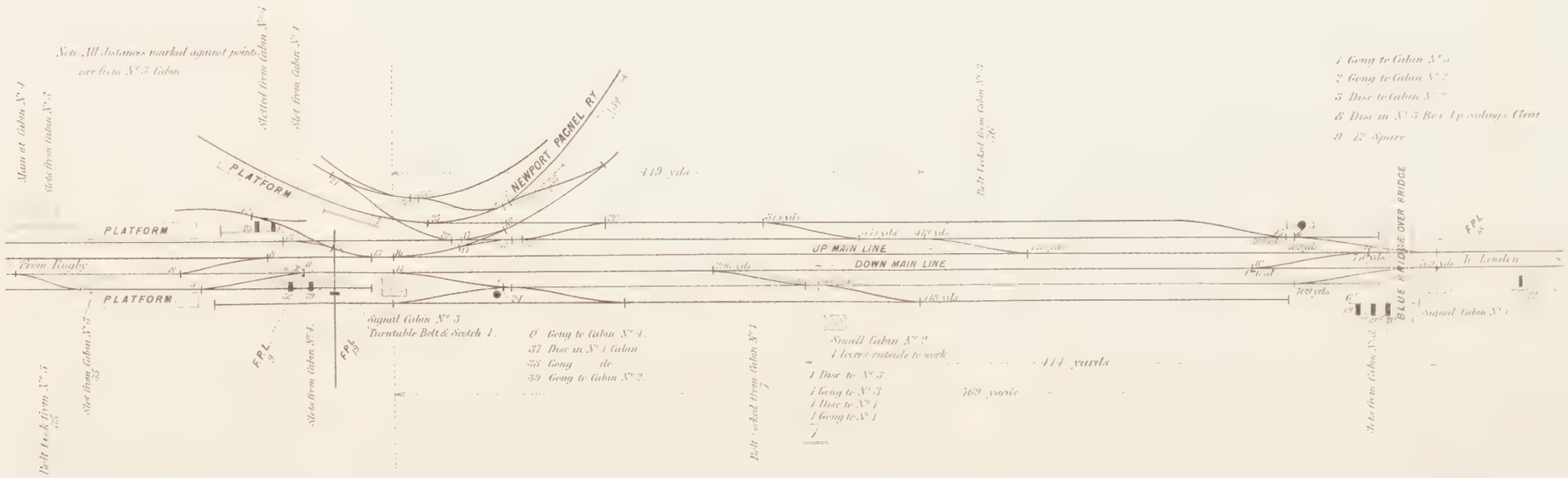
The third connexion between the up siding and the up main-line is by means of a pair of facing-points on the siding, called the top points, close to and worked from No. 1 signal-box.

Shortly after 9 o'clock p.m. on the day in question there were two trains standing on this up siding. A coal-train was in front and an up Scotch goods-train behind it, and at half-past 9 o'clock permission was obtained from the signalman (Mcat) on duty in No. 3 signal-box for that up Scotch goods-train to leave, and he withdrew the bolt that locked the middle

To accompany Colonel Yolland's Report dated the 7th December 1876

LONDON & NORTH WESTERN RAILWAY.

WOLVERTON SOUTH END.



points, and the breaksman of that train pulled them open, and held them while the train passed out of the siding, through these points on to the up main-line, and left the station. The signalman (Moat) then pushed back the lever No. 36 into its normal position, for the purpose of bolt-locking the middle points in the manner I have described; and if he had not been enabled to force the lever into its proper notch in the frame, it would not have been possible, owing to the interlocking of points and signals, to have taken off the up-signals at No. 3 signal-box for an up train to pass through the station.

Signalman Moat was relieved by another signalman at 10 p.m.

An up coal-train 11h. 35m. a.m. from Rugby to Willesden reached Wolverton at 9.46 p.m., and passed through the pair of facing-points opposite to No. 3 signal-box into the up siding, and stopped at the water-column, which is very close to the middle points, for the purpose of taking water; and after stopping about 15 minutes, the guard of this train told the driver to go ahead, and draw down to the top points, and the train started, passed out on to the up main-line through the middle points, without the driver knowing that he had done so, and it was run into by the up Liverpool express-train about 10.14 p.m.

The 5h. 30m. p.m. up Liverpool express-train was made up of portions of trains from Liverpool, Manchester, and Holyhead. It consisted of—

Engine, No. 2191. District, No. 1.

	No.	
Fish truck (with meat)	339	From Holyhead.
" "	23	
" "	171	
" "	492	
" "	270	
Guard's van	185	Manchester portion.
Composite carriage	34	
" "	39	
Third-class "	1058	Liverpool portion.
Composite "	159	
" "	1001	
Guard's-van	140	
Guard's van	320	From Holyhead.
Composite carriage	1317	
" "	948	
Third-class "	1147	
Guard's van	460	

altogether 17 vehicles, besides the engine and tender.

The evidence of the company's servants is as follows; but I should mention that I did not see the driver of the up Liverpool train, as he was too much hurt to attend:—

Edward Moat, signalman at No. 3 box, Wolverton, between eight and nine years a signalman, and five years last July in that signal-box, states that he came on duty at 2 p.m. on the 14th instant, and about 9.30 p.m. he received instructions from the foreman coalman to let a Scotch goods train out of the up siding through the middle points, after the up second Scotch express-train had passed; that every signal was at danger, and he pulled No. 36 lever back for the purpose of unlocking the points by withdrawing the bolt, and the train started almost as soon as he had unlocked the points; that these points had not been unlocked before whilst he had been on duty that day; that as soon as he observes that the tail lights of a train which has been drawn out of the up siding on to the up main-line (through the middle points) are in their proper position, he concludes that the train has drawn out of the siding on to the up main-line, but he does not receive any signal from anyone to tell him that the train is clear of the points of the cross-over road; that he thinks the Scotch goods train went out of the siding about 9.35 or 9.37 p.m., and he then put the lever, No. 36, over; that the lever generally takes three pushes to get it over into the notch, and it took three that night, as it moved very stiffly; that the lever moved in the regular working way, and it did not appear to work more stiffly on that occasion than it usually did; that he left the signal-box at 10 p.m., leaving lever No. 36 in the notch, indicating that the middle-points were properly locked, closed against the up main-line; that in the ordinary course of working it takes three good pushes to get No. 36 lever over; when it is frequently used it gets easier, but if it has been standing 12 or 24 hours it does require three or four pushes; that on the night in question, when pushing the lever over it did not spring back at all, but remained stationary after each push; that on the following morning it took three or four or four or five pushes to get the lever into the notch, when the points were wrongly set; that he put his left hand on No. 35 lever, but that did not assist him in putting the lever over; that there was nothing in the moving of the lever that night which induced him to think that the points were not properly closed and locked; that no one was on duty at No. 2 box; that he does not know that anything was done to the wires during the night or the next morning.

William Sheldrake, breaksman to the 2 p.m. second up Scotch goods-train from Crewe, 18 years a breaksman, states that his train reached Wolverton at 9 p.m. on the 14th instant; that at 9.30 p.m. he got permission, by the locking-bolt being withdrawn, for his train to leave; he did not see the locking-bolt moved, but found that it had been withdrawn; that the driver of his train called out to him from the engine, near which he was standing, that it was "all right," and he tried the handle of the points and found that he could move them; that he opened the points and signalled the train to go ahead; that the train then proceeded out of the siding on to the up main-line; that he did not close the points when the last vehicle had passed over them, but he let go the handle and expected that the points being self-acting would close themselves, and he was obliged to be sharp so as to get into the train, and he would not have had time to examine the points; that he did not see them closed; that it would have taken about three minutes for the train to get clear over the points which he was holding.

Charles Smith, signalman at No. 3 box, Wolverton, 20 years a signalman, states, that he came on duty at 10 p.m. on the night of the 14th instant; that his mate told him before he left that the Liverpool up express was 45 minutes late (it is due at 9.28 p.m.), and that a coal train was in the up siding, shunted for the express train to pass; that he received "be ready" from No. 4 box at 10.4 p.m., and he passed the signal on to the Blue Bridge box No. 1; that he received an acknowledgment from No. 1 box; the disc in his cabin was already off, and he then took off the signals for the up express train, *i.e.*, the slot on the up home-signals at No. 4 and No. 3 up home-signal; that the express passed at 10h. 9m., at about the usual rate, and at that time the lever No. 36 was in its proper notch, indicating that the points of the middle crossing stood right for the siding and shut against coming out on to the up main-line; that as soon as the train had passed he put the up signals at "danger," and received the "be ready" signal from No. 1 box for the 9 o'clock down train; that as soon as he had taken on the 9.0 p.m. down train he heard a great noise with the steam in the cutting, and the man at No. 1 box gave six beats to block the up road, and he passed that signal on to No. 4 signal-box; that he passed it on directly, as he had received a signal from that box for an up coal-train; that it was rather a cold night; that he has been in No. 3 box ever since it was opened, nine years since; that once before during this long time, it might be seven or eight months since, he was unable to put No. 36 lever into its proper notch for the points when lying open to the siding, and he sent a man down to them, who pushed the points over, and then

he was enabled to put No. 36 lever into its proper position; that the lever can be pulled over readily by a single pull, thus unlocking the points, but it requires two tidy pushes of the lever to put it over into the other notch, by which the points are locked right for the siding; that if he had had to push that lever over three or four times he would have known that something was wrong; that he went off duty at 6 a.m. on the 15th, and nothing was done to lever No. 36 in his box up to the time of his leaving; that he has no means of regulating the wire that moves the bolt lock in his box."

Alfred Meacham, signalman at No. 4 signal-box at Wolverton, upwards of 11 years a signalman, states that he came on duty at 10 p.m. on the night of the 14th instant; that at 10.4 he received the "be ready" signal for the up Liverpool express-train, and he immediately sent that signal forward to No. 3 signal-box by an electric bell; that signal was repeated back from No. 3 box, and the slot was taken off, and the disc signal changed to "main slot off;" that he then took his home and distant signals off; that he received "train on line" from Castlethorpe at 10.8 p.m.; the train passed at 10.10, the signals being all off for it to proceed; that it passed at the usual speed; that it was rather frosty that night, and it was dry and clear when the train passed.

Daniel Millen, signalman in No. 1 signal-box, nearly 21 years a signalman, and two years at No. 1 signal-box, states that he came on duty at 10 p.m. on the 14th November, and the second Scotch goods up train passed No. 1 box, according to the train register book, at 9h. 31m. p.m.; that at 9.42 an up coal-train was let out by the top points; then there was another up coal-train signalled into the siding at 9.44 p.m., and that was the train which was run into; that at 10h. 4m. he received the "be ready" signal for the Liverpool up express-train from No. 3 box, and the next thing was the "be ready" signal for the 9.0 p.m. down passenger-train; that he next heard the up Liverpool express-train whistling through the station, and he rang the telegraphic bell and gave "train on line" to Bradwell ($1\frac{1}{4}$ miles), and he then put up the signal at No. 3 box behind the express train, and then stood looking out of the window to observe the express-train come up the cutting, and whilst he was looking at it, it seemed as if it had disappeared all at once, and he heard a peculiar noise with the steam and saw the fire all over the road, and at the same time Bradwell rang the 9.0 p.m. down train on, giving "train on line" for it, but instead of taking "train on line" he gave Bradwell the imperative block by six beats, repeated, and then he put his signals on at danger, both up and down. The collision occurred about 10.10, as near as could be; that he then took his lamp, and went up the line to meet the mail, and stopped it at about 100 yards from the signal-box; that this train had not passed the down distant-signal, but was close to it when he put the signal up.

George Leach, fireman of the 5h. 30m. p.m. up passenger-train from Liverpool on the 14th November, six years a fireman, states that his mate took charge of the train at Rugby; that they stopped at Blisworth, and were not appointed to stop anywhere else before reaching Willesden; but after leaving Blisworth they found the signals all right, including those at Wolverton; that they were running at from 40 to 45 miles an hour through the station, and they were not aware that there was any train on the up line on which they were running, until they run into the coal train, and they were still running at the same rate as they had been; that he was firing at the time, and he and his mate were both thrown off the engine against some waggons which were on the down siding; that his mate fell on him and was a good deal hurt, and he was shaken and bruised, and was still off duty; that they ran into the other train with the steam full on, and there was no time to do anything except that his mate shut the regulator as they struck the waggons; that he had just put on two shovel-fulls of coals on the fire when the collision occurred; that there were five trucks of meat next to the tender of the engine; that his engine and tender fouled the down road; that there were 19 vehicles in all in his train.

John Borman Goff, head guard of the 5h. 30m. p.m. train from Liverpool on the 14th November, five years as guard, and six years in the service of the London and North-Western Railway Company, states that he was in charge of the train and rode in the van from Liverpool, the 12th vehicle in the train, and there were two other guards with the train; that they left Liverpool at 5.35, or five minutes late; left Edgehill and Runcorn also five minutes late; left Crewe two minutes late, and got to Stafford at the proper time 7.15 p.m., but did not leave Stafford until 7.57, or 37 minutes late, owing to the late arrival of the Holyhead portion of the train, which was telegraphed late in starting from Holyhead 23 minutes, and which also lost some time between Crewe and Stafford; that they stopped at Lichfield and Nuneaton, and left the latter station 36 minutes late; that they arrived at Rugby at 9.15, or 40 minutes late, having lost four minutes between Nuneaton and Rugby; that it was wet on that section of the line; that they left Rugby at 9.22 p.m., or 40 minutes late, reached Blisworth at 9.52, or 45 minutes late, and they left at 9.54 p.m., not having to stop before they reached Willesden junction; that he saw that the signals were all off for them to run through Wolverton station without stopping, and they were running quite 40 miles when the collision took place, without any previous warning that anything whatever was wrong; the five trucks with meat in them were all thrown off the rails, smashed up, and heaped up on the tender; the next guard's van was also off the rails and rested partly on the engine and partly on the meat trucks; the next composite carriage was also off the rails and knocked under the guard's van; the following composite, a third-class carriage, and the two other composites in front of his van were also all thrown off the rails and had the foot-boards, handles of doors, and windows mostly broken. The van in which he rode and the one behind it were both off the rails, and the seat on which he had been sitting was knocked off; the remaining vehicles in the train all remained on the rails; he was knocked down by the collision, but not seriously hurt. The collision took place about 10h. 14m. p.m. There were four carriages having break blocks on the wheels, and three break vans, with guards in each.

Charles Bradford, engine-driver eight years, and between 13 and 14 in the Company's service, states that he was taking the 11h. 35m. a.m. coal-train from Rugby to Willesden; that he had 30 waggons and a break-van, and he reached Wolverton at 9h. 46m. by the main up line, passed into the siding by the pair of facing-points opposite No. 3 signal-box, and stopped his engine at the water-column, 60 feet north of the points, for the purpose of taking water; that he stopped there about 15 minutes, when his guard told him to go ahead on the siding, for the purpose of drawing down to the Blue Bridge; that he started, and, although he did not know it at the time, his train passed out by the middle road on to the up main-line; that the engine had got out on to the up main-line, and some five or six waggons were either on or foul of the up main-line, about 10h. 15m.; that he did not discover that he was out on the up main-line until his train was struck, and he did not get any warning whatever until the collision had taken place; that he was travelling ahead very slowly, not so much as three or four miles an hour, and he does not know at what time the collision took place; that six waggons behind the engine were broken up, and the seventh was scratched on the side; that there was no whistle from the coming train; that his engine and tender were knocked violently ahead with one waggon

attached, and he and the fireman were bruised; that he thought he was still on the siding until he had got as far as the Blue Bridge, or within 20 yards of it.

Edward Eglen, foreman of the locomotive erection shop, 36 years in the Company's service, states that he arrived at the scene of the collision at 10.45 p.m., and found the engine lying on its right side, separated from the tender, partly on the down main-line and partly on the down siding-line, the tender was thrown ahead past the engine on the up line and partly on the up siding; that there were a number of meat trucks lying on the top of the engine and tender; that he thinks five carriages and one break-van at the rear of the train remained on the rails, and that there were four carriages between the meat trucks and the carriages which remained on the rails; that these four carriages were thrown off the rails, one of which was broken up, and another partly so; that both the engine and tender of the express train were a good deal damaged. The tender was lying on its side. The meat trucks were all smashed up.

George Winsor, ganger of platelayers, 15 years in charge of a length, and 24 years in the Company's service, states that he was fetched, and got to the spot between 11.15 and 11.30 p.m.; that he went to look at the points of the cross-over road, and found them standing open, so that a train might come out of the siding on to the up main-line. Some of the waggons of the coal train were still standing over the points; that he then went across to the down siding to look at the locking-bolt, and found that the bolt was not in the hole in the slide, where it should have been to lock the points in their proper position, but was pressing against the side of the slide bar and holding the points in the wrong position; that he did not move them, and the points remained in that state until between 5 and 6 next morning, when Mr. Entwistle pushed them over; these points are in his length, and he has to look after them, but he has never known them stick, but he heard complaints two years since of their having done so; heard the waggon examiner say so; that nothing to his knowledge was done to the wires that move the locking-bar, and he does not know that they were regulated by anyone; that he has never had anything particular to do with these points, and he has never known them stick.

John Butcher, inspector of signals, states that he arrived at Wolverton at 9.30 a.m. on the 15th November, and went to the spot where the accident had taken place and to look at the bolt-lock; that he found the bolt $7\frac{3}{8}$-inch through the slide-bar; that several of the officers of the Company were present; that he was asked by Mr. Mumford how he could account for this accident, knowing that at the time the main-line up-signals were all off; that he stated that he could not say how this had happened, unless by some force or other the P.C. on duty had got the lever over at the same time that the points were standing right for the main-line; that the ganger Winsor came up at once and explained the condition in which he found the points; that the bolt-lock was pressing against the side of the slide. Mr. Mumford suggested that he should go into the cabin and see if he could do it now, and to this he objected, unless they would send some one up as an independent witness to see what took place; that Mr. Kamps was selected, and when they got into the cabin he first asked the P.C. on duty if he could unlock lever No. 36; he said "Yes," and did so; the points were then shifted and put right for the main-line, and he then asked the signalman to put the lever back; he took over the lever at once, in his ordinary way, and when he had got the lever half way over by pushing, he said "There is something wrong, the points are closed;" that he told him not to mind that, but to put the lever back if he could, and the signalman said he could not get it back, but he got it about half way over; that he then tried to push the lever over, but could get it only a little farther than the signalman (Brown); that he then called Clark to assist him in pushing it over, and both failed to put it over by about four inches; that about 1.30 p.m. some of the officers went to No. 3 cabin, with signalman Moat and Smith, to ascertain if Moat could put it over; he (Moat) took over the lever in the ordinary manner with both hands, and tried by five or six following pushes to get the lever into the notch with both hands, he then let go the lever with his left hand, caught hold of No. 35 lever, which was back from the front, and between the two levers he pushed the lever over.

From the foregoing statements it will be seen that the Manchester and Liverpool sections of the up Liverpool express-train reached Stafford at its appointed time, but were there detained no less than 37 minutes waiting for the Holyhead train, which started 23 minutes late, and lost time on the way, till it joined the other portions at Stafford, instead of at Crewe, as it should have done.

Where sections of inland trains are run in connection with other sections dependent on steamboat traffic, those sections should not, in my opinion, be subjected to so much delay; but the Manchester and Liverpool portions of the up express-train should have been sent on from Stafford in this instance, as they had already been sent forward from Crewe.

The want of punctuality was undoubtedly the primary cause that produced this collision, as the 5.30 p.m. Liverpool up express-train was due to pass through Wolverton station without stopping, before the up Scotch goods-train was permitted to leave the up siding and come out on to the up main-line by signalman Moat.

Immediately after signalman Smith relieved signalman Moat in charge of No. 3 signal-box, at 10 o'clock, he received the "be ready" signal from No. 4 signal-box for the Liverpool up express-train, and after he had telegraphed it on to No. 1 signal-box and received an acknowledgment, he took off the slot on the up home-signal at No. 4 signal-box and his own up home-signal for the train to run through without stopping, and the train passed, it is said, at its usual rate of from 40 to 45 miles an hour, and continued to run at the same speed without any intimation or warning whatever that anything was wrong, until it ran crashing into the front portion of the up coal-train for Willesden, which was supposed to be drawing slowly ahead along the siding towards the top points, instead of which it was passing from the up siding to the up main-line through the middle points, which stood open for a train to leave the siding. The result was, the engine of the Liverpool up express-train ran at full speed into the coal waggons, smashing up six or seven of them, being itself thrown off the rails and falling over on its right side, foul of the down-main line. The coupling between the engine and tender was snapped, and the tender fell over on its left side, slightly in advance of the engine. The five fish-trucks filled with meat were all thrown off the rails, smashed, and heaped up on the engine and tender, and the next eight vehicles, consisting of three guards'-vans and five carriages, were also all thrown off the rails, and some of them were a good deal damaged. Three carriages and a guard's-van at the tail of the train, out of a total of 19 vehicles, alone remained on the rails.

The most remarkable circumstance connected with this collision is that neither the engine-driver, fireman, or guard riding in the forward van were killed; and the passengers throughout the train probably owed their comparative escape from fatal results to the fact of the force of the collision having been mainly expended in breaking up the coal and fish trucks in the two trains.

I cannot say that blame attaches to any servant of the Company with the trains, or on duty in the signal boxes at the time, and great credit is due to signalman Millen, in No. 1 signal-box, for the prompt manner in which he took immediate steps to stop the

9.0 p.m. down passenger mail-train from Euston, for which the "be ready" signal had already been received at No. 1 signal-box, before the collision occurred.

The position of the "middle points" was at once examined, and they were found standing open for a train to pass through them from the up siding, to the up main-line; and the point of the bolt, which is moved from No. 3 signal-box by No. 36 lever, was pressing hard against the side of the slide bar, and thus keeping it and the middle points from falling back into their normal position, open to the siding, and closed against the main-line. They remained in this state until the following morning, when one of the officers of the Company slightly touched the handle of the lever and the points then shifted to their proper position, and the bolt passed through the hole in the side of the slide bar to the extent of about $7\frac{1}{4}$ inches, and the bolt locked the points.

According to the evidence, it took so much force to push lever No. 36 back into its notch for the normal position, when the points were wrongly opened on the following morning for experiments, and tried by various persons, as well as by signalman Moat, that it is difficult now to account for his not having, at 9.30 p.m., when the up Scotch goods left the up siding for the up main-line, detected that there was something wrong with those points and had them at once examined. But it was stated by the superintendent of the signal department (Mr. Edwards), that they were purposely made to work stiffly, and one of the inspectors who had worked them formerly in this box said that sometimes they worked much more easily than at other times. The signalman Moat is said to be one of the best men at the station.

If there had been a disc-signal attached to those points, the signalman could have seen by its light whether the points were closed to the main-line or to the siding, after the up Scotch goods-train left; and in a similar manner the driver of the coal-train would have at once seen that the points were not set rightly for him to travel along the siding.

The collision is instructive in other respects. It seems to point out that bolt-locking from a distance, when resorted to, should be done by means of rods, and not by wire, and when the points are to be moved and held by the breaksman or guard of a train, or any one in the yard, by means of a lever on the ground, means should be provided for keeping the signals at danger that will cover the operation of entering or quitting the siding.

I have, &c.,
W. Yolland,
Colonel.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 22nd December.

LONDON AND NORTH-WESTERN RAILWAY.

North-Western Hotel, Liverpool,
9th December 1876.

Sir,

In compliance with the instructions contained in the order of the 30th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 22nd ultimo at Madeley station, on the London and North-Western Railway.

The passenger train due to leave Birmingham at 6 a.m. for Liverpool ran over a milk truck as the train was passing through the station. No persons were hurt. The milk truck was one of the platform four-wheeled barrow trucks for carrying passengers' luggage or milk cans. These trucks are about one foot nine inches high, three feet wide by six feet long. On the day in question the truck contained one milk can. Two of the station porters were pulling the truck from the up to the down side of the line, over the boarded foot crossing at the north end of the station, and a farm labourer who had brought the milk to the station was pushing the milk truck from behind.

Madeley station is protected with the ordinary home and distant signals, besides starting signals. These are all worked from a raised cabin at the south end of the station, and, are interlocked with the points. The train, which consisted of an engine and tender, five passenger coaches, and a break-van, with the guard in charge at the tail of the train, left Birmingham at the proper time. The morning was foggy, and the train was delayed by signals at the south side of Stafford station. It left Stafford nine minutes late, and was not timed to stop at Madeley. The signals at Madeley were all right for the train to pass, and the driver stated that he whistled as he approached the south end of the station. While he was running through the station at a speed of about 35 miles an hour, he noticed the milk truck, with the men drawing it, about 50 yards in front of him. He could not pull up, but gave several sharp whistles to alarm the men in charge, and immediately ran over the milk truck. The driver and the guard in charge brought the passenger train to a stand as soon as they could, in order to examine the train and see what injury had been done. Some of the stop-cocks and the hopper-head under the smoke box of the engine were damaged, but no other part of the train was injured, and it proceeded to Crewe, where a fresh engine was procured. The permanent way was not damaged. The milk truck and can of milk were completely destroyed, and the men in charge had a fortunate escape of their lives.

These men stated, that they listened for a moment before they crossed the rails with the milk truck, but they could hear nothing approaching, and proceeded to cross the line, as the milk was intended to go by the next down train to Manchester, which was timed to stop at Madeley. The two Railway Company's porters, who were pulling the milk truck, further stated that they were in a hurry to take the milk across, so as to proceed to the other side of the railway to assist in shunting a coal train which was about to start for Winsford; and I am inclined to think that their anxiety to go and do the work that was required for the coal train prevented them from keeping a proper look out for the express train, which was over due.

Madeley station has a foot-bridge above the rails for passengers to cross the line, but it is necessary for the luggage and other goods which are conveyed by passenger trains to be taken across the lines on the wooden crossing places which are constructed for this purpose at the north and south ends of the station.

I have, &c.,
F. H. Rich,
Colonel R.E.

The Secretary,
(Railway Department),
Board of Trade.

LONDON-AND-SOUTH-WESTERN RAILWAY.

Board of Trade,
(*Railway Department*),
Sir, 30*th November* 1876.

In compliance with the instructions contained in the Order of 16th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 13th instant at the Nine-Elms goods-yard on the London-and-South-Western Railway.

As the 6.5 p.m. passenger-train from Hounslow for the Waterloo-station, London, was passing the above goods-yard at a speed of about 30 miles an hour, the engine came into collision with a goods-truck which had fouled the main-line, on being thrown from a shunting line running parallel to the main-line on which the passenger-train was travelling. The engine of the passenger-train remained on the rails, as well as all the vehicles in the train, excepting the leading break-van. This van was, fortunately, not detached from the engine, but was dragged forward for about 300 yards before the train came to a stand. The side of the break-van was knocked in, but the carriages behind it were not damaged.

One passenger has complained of injury, and the guard in the leading van was somewhat hurt in the wrist, but he was not obliged to leave his duty.

Description.

At this point, about two miles from the Waterloo station, there are four lines of rails, viz., the up and down Windsor lines, and the up and down main-lines, and on the up side there are three sidings running parallel to the main and Windsor lines. There is a cross-over-road between two of these sidings, and it was in the use of the points of this cross-over-road, leading from the siding next to the main line, which has obtained amongst the shunters the name of "the excursion-road," or "the shunting-line," to the siding next to it, and during a shunting operation, that the waggon that was thus struck by the up-Hounslow-train was thrown foul of the up-Windsor-line. The passenger-train in question consisted of a tank-engine, six first, two second, three third-class, and a composite, carriages, and two break-vans.

Evidence.

The engine-driver, *John Proctor*, states, that he was running at a speed of between 20 and 30 miles an hour, in passing the Nine-Elms goods-yard, when he heard an alarm-whistle proceeding from the pilot-engine engaged in shunting in the goods-yard. He knew, therefore, that something was wrong, and, on looking up, he saw two red signals close to him, but between one and two hundred yards from the waggon which he afterwards struck. His steam was already shut off. He told his mate to apply the break, while he opened the sand-valves and blew his whistle. He felt his engine strike against something, but there was very little shock. He brought his train, he thinks, to a stand within less than 400 yards. He saw the empty waggon across the rails in front of him about two or three seconds before he struck it. It was misty, but not very dark. The buffer-beam of his engine was broken, and the framing bent, and the steps were torn off, but his engine did not leave the rails.

The head-guard of this train, *Charles Membrey*, was riding in the leading break-van next behind the engine. His train was, he thinks, proceeding at a speed of about 25 or 30 miles an hour when he heard the break-whistle from the engine. He immediately applied his break, and he was in the act of doing so when he felt a shock, which knocked him up against the corner of his van. He was severely shaken in the hip, the arm, and head, but was not obliged to leave his work. The front part and all one side of his van were taken clean away, and the leading-wheels were thrown off the rails, but the hind wheels remained on the rails until it came to a stand between three and four hundred yards from the point where it struck the waggon. The accident happened about 6.57 p.m., and the train was running about 21 minutes late, having been delayed by a goods-train from the North-and-South-Western Junction Railway, which goods-train had got in front of it, and, having been stopped by signals, was unable to maintain its speed up the steep gradient leading over Barnes bridge.

Charles Payler, the under-guard, was riding in the van at the tail of the train. He heard the break-whistle sounded from his engine, and perceived that his train was slackening speed. He at once applied his break, and found there was something wrong in the running of his train. He did not feel any shock, and was not aware that his engine had struck a waggon until after the train stopped.

Thomas William Thatcher, head-shunter in the Nine-Elms goods-yard, has been employed in shunting in the same yard for about five years. On the evening in question, he had two Great-Western waggons to be separated from 25 other waggons, which were attached to the pilot-engine, and it was necessary to push the two waggons back into the siding next to the main lines, and the 25 waggons into a siding further from the main lines. He called out, "Excursion-road," meaning, in saying so, to instruct his third man. It did not matter to him which man held the points, whether Churchill, the ground-signalman, or Mears, his third man. He then signalled to the engine-driver to back the train. The driver had scarcely gone above four or five waggon-lengths back when he (Thatcher) saw a red light from the direction of the points. He was himself about 10 waggon-lengths from the points. As he saw the red light he heard the waggon grating on the gravel. He therefore ran and unhooked the engine, and told the driver to run to the junction and block the up-Windsor-line. He did not see what happened, but he guessed what might have happened, and took that precaution to arrest any approaching train. Before he gave the engine-driver the signal to set back, he received a green light from the direction of the points.

William Churchill has been acting as ground-signalman at this spot for five or six months. He understood it to be his duty to hold the points, and, if anything occurred, to proceed towards the junction and stop any approaching train. He was never told by Mr. Terrill, or anybody else, that he was not to hold the points, but he was instructed to hold the points until waggons had gone clear, and not to allow a second shunt until the waggons had gone clear. He positively asserts that the man he relieved told him to hold the points. He cannot say whether Mr. Terrill told him to hold the points or not, but Mr. Terrill has very often seen him holding points. At the time of the accident he was holding the points. The shunter cried out to him, "Excursion-road," and he considered it his duty to hold the points over for that road. He held them over for the Great-Western waggons to pass into the excursion-road. He knew that the Great-Western waggons had to go to the excursion-road, and the other waggons would have to go to the other road; but he understood that

the engine would push back the two waggons into the excursion-road, and then pull forward again before pushing the 25 waggons back into the next siding. When the two Great-Western waggons had gone down the excursion-road, the point-handle flew out of his hand, just as if the flange of a wheel had caught it. That caused the waggons next to the Great-Western waggons to go into the siding next to the excursion-road, and those waggons in going into that siding caught the next Great-Western waggon and knocked it on to the main up-Windsor-line. He gave a signal to the driver of the pilot-engine to stop. As soon as he saw that the waggons were on the yard-road, and that the Great-Western waggon had been thrown on to the main-line, he ran back to stop any passenger-train that might be coming. He is positive he gave a signal to the driver to stop before the waggons hit one another.

James Thomas Moss is the second shunter at the Nine-Elms goods-yard. Thatcher ran up to him about 7 o'clock, and said to him, "straight-road and excursion-road," meaning that some waggons were to go one way and some the other. He held the straight-road points for the waggons, and, on going towards the excursion-road, he saw the waggon off the rails. He was about 100 yards from the excursion-road points when the Great-Western waggon was thrown off the rails. He has been shunting there for about two years. He admits that fly-shunting is done every day at these excursion-road points. Owing to the distance he was away, at night time, he could not see whether they were attempting to fly-shunt on the occasion of this accident. It would have been in accordance with the usual practice at that spot for Churchill, in holding the points, to allow two waggons to run along the excursion-road, and the other 25 to run along the other road, without causing the engine to again move forward, whilst he was moving the points between the Great-Western and the other waggons. It has been the daily practice for Churchill to hold the points leading to the excursion-road. It is his (Moss's) duty to hold the points, but he has often seen Churchill catch hold of them as he has been going to do so. He would have held the points on this occasion if Thatcher had not put the engine in motion before he could get to them.

Samuel Mears, third shunter in the Nine-Elms goods-yard, unhooked the two Great-Western waggons from the 25 waggons. To the best of his knowledge they were only one waggon-length from the excursion-road points when he did so. He held a green light to Thatcher as an "all-right" signal. He saw Churchill holding the points leading to the excursion road, as he always had done, and he gave Thatcher a light to bring back the Great-Western waggons into the excursion-road. Between six and seven the same evening they had been doing the same thing. On the occasion in question he was standing close to Churchill as the train was backing. The Great-Western waggons had gone about half a length over the points. The Great-Western and the next waggon to it were within half a length of one another as they passed him.

Henry Terrill is the assistant-goods-superintendent at Nine-Elms station. On the receipt of a complaint from Inspector Lingley in July last, he sent for Churchill, and told him that his duty was that of a ground-signalman, that he should have flags by day and a lamp by night, and that he was to prevent a second shunt being made from the excursion-road points until the first set of waggons were shunted off clear. He did not tell him that he was or that he was not to hold the points. He has never seen him holding the points. If he had seen him doing so before this happened he would have stopped him at once.

Conclusion.

This collision is somewhat similar to that which occurred on the 25th February last at the same spot, when a waggon, thrown in shunting from the shunting-siding, which is less than six feet from the up-Windsor-line, was also struck in the dark by a passenger-train passing at high speed. In reporting upon that accident of February last, I had occasion to observe how narrow an escape it was from being a very serious accident, and the same remark applies also in the present case. I further stated that the best remedy for such a state of things was that which the Company were about to adopt, viz., the diversion of the passenger-lines, with a view to the site which they then occupied being added to the Nine-Elms goods-yard, but that such an improvement would probably not be carried out for perhaps nine or twelve months, and that it was very desirable to adopt meanwhile some precaution for insuring safety to passenger-trains passing the spot. Since that date considerable progress has been made with the works required for providing new passenger-lines, but that progress appears not to have been as great as it might have been, and it is much to be feared that the nine or twelve months above referred to will be exceeded. Until they are completed, and so long as goods trains are shunted in such close proximity to the passenger-lines, more or less risk must be constantly incurred to the important passenger traffic which passes this yard. The cross-over-road and sidings from which this truck was thrown, and near which this collision occurred, form the only means of entrance to and exit from the Company's main goods-shunting-yard at Nine-Elms. The risk is the greater, in consequence of there being four passenger-lines, on all of which the traffic is very heavy. Since the previous accident a special ground-signalman has been employed by day and night, as I recommended; but this signalman, instead of confining himself to his proper duties in seeing that others did not cause risk to the traffic, has taken upon himself to work the points; and he himself caused the present accident, in doing so, and in the course of what must be considered as fly-shunting.

The instruction, a copy of which I enclose, has been since issued, and will, it is to be hoped, tend to prevent the recurrence of such an accident until the new passenger-lines have been completed. I need hardly add that their speedy construction and early employment, for avoiding the risk of carrying on shunting operations, in darkness as well as in daylight, within less than six feet of a main-line on which passenger-trains are constantly passing at high speed, is of great importance to the safety of the traffic.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

APPENDIX.

South-Western Railway.

Instruction No. 253, 1876.

Notice to Inspectors, Enginemen, Shunters, Ground Signalmen and Pointsmen in the Nine Elms Goods-Yard.

In must be distinctly understood that where the shunting roads are parallel with and on the same level as the running lines, all shunting into and out of the "excursion road," which is next the up-Windsor line, must be carried on with extreme care, no "flying shunts" can under any consideration be permitted, but the engine must come to a dead stand with the trucks before they are unhooked.

The ground signalman who was appointed to watch over and regulate the shunting at this particular point

to guard against casualties occurring, must not be called upon to hold points, but must see that this instruction is obeyed, and in the event of any mishap occurring, whereby the running line or lines becomes obstructed, he will immediately do everything in his power to stop trains in both directions, and for this purpose he must always be provided with 12 fog signals, besides the usual flags and hand-signal lamp.

E. W. Verrinder.

Office of Superintendent of the line,
Waterloo Bridge Station,
November 14th, 1876.

Printed copies of the above report were sent to the Company on the 22nd December.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE RAILWAY.

Board of Trade,
(Railway Department,)
28th November 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 18th instant, the result of my inquiry into the circumstances connected with the collision which occurred on the 15th instant at Hexthorpe junction, near Doncaster, on the Doncaster and Penistone Branch of the Manchester, Sheffield, and Lincolnshire Railway.

In this case, the 7.50 p.m. down-passenger train from Doncaster for Penistone came into collision (during fog) with an up-mineral train from Wombwell Main to Hexthorpe mineral yard.

Eight passengers have complained of injury.

The guards of the passenger-train and coal-train were also slightly injured.

In the passenger-train, the engine had its buffer-plank, buffer, smoke-box door, sand-boxes, and sand-rods broken, and its motion-plate bent, and a carriage-truck had its side damaged.

In the mineral-train, five coal-waggons were damaged.

At Hexthorpe junction, which is situated about 1¾ miles from Doncaster, two mineral lines join the main lines with a regular double junction, the facing-points being on the line from Penistone to Doncaster. The point and signal-levers are concentrated and interlocked in a raised cabin, situated over the facing-points, and on the north side of the line.

The only signals to which it is necessary to refer are the down-signals for main-line trains from Doncaster, of which the down-home signal is 140 yards from the cabin and on the south side of the mineral and main lines, and the down-distant signal about 800 yards from the home-signal. The signal-cabin next to Hexthorpe, and on the Doncaster side of it, is at Cherry Tree junction, about 1¼ miles distant. There is telegraphic-bell communication between the two cabins, and also from Cherry Tree to the South Yorkshire junction at Doncaster; but the code for working the latter has not yet been arranged with the Great Northern Company.

The line rises from Cherry Tree to Hexthorpe on a gradient of 1 in 112.

The collision occurred at the crossing of the down-main line and up-mineral line, at a point 60 yards inside the down-home-signal, and about half a mile inside the down-distant-signal.

The traffic is not yet worked upon the block-system.

The evidence relating to the collision is as follows:—

1. *George Bowles,* 5 years signalman, 14 months at Hexthorpe junction.—I came on duty at 6 p.m. for 12 hours. The weather was clear when I came on duty, but a mist began to rise about 7, and got thicker towards 8 o'clock. I could see my home-signal back lights (which are about 150 yards off) some 20 minutes before the collision. About 8 o'clock a fog-signalman came to the cabin, and left it before the collision, to attend to the down-signals; and after the collision I found that there was a man attending to the up-distant-signal. At 7.56 a train of empty waggons arrived from Doncaster to cross into the Hexthorpe yard. This train crossed at once. As soon as the empty train was clear in the yard, I lowered my up-home signal for an up-mineral train to cross into the goods yard, I having heard this train whistle; this was between 7.58 and 7.59. The passenger-train was due from Doncaster at 7.55, but I had not yet heard it whistle. There is a bell in the cabin communicating with Cherry Tree junction, about 1¼ miles distant, in the Doncaster direction, and the passenger-train had not been advised when I gave the signal to the mineral-train to cross. I received this bell-signal at 8.2. The collision occurred at 8.4. When I lowered my signal for the coal-train, its engine was close upon the home-signal, as I heard the driver or fireman say the signal was right; and there was five minutes occupied from this to the time of collision in going a distance of some 200 yards. Had I been looking, the fog was not so dense but that I could have seen the head-lights of the engine of the passenger-train when it struck the mineral-waggons. I did not hear any whistle either for signal or breaks from the passenger-train. The engine of the passenger-train was so close to the junction before I heard it coming, that I had no time to alter the facing-points and keep the coal-train on the up-main line. The usual time for a train to arrive after getting the bell-signal from Cherry Tree is four or five minutes, instead of only two as on this occasion. The driver of the passenger-train told me that he had missed seeing the back-signal.

2. *Henry Greensmith,* signalman 18 months, all the time at Cherry Tree.—I have bell-communication with Hexthorpe junction and also with South Yorkshire junction, but the latter is not yet in use. The passenger-train was about a quarter of a mile off, as I heard by its whistle, when I rang it on to Hexthorpe junction at 8.2; my signals were off for it, and it passed my box, at six or seven miles an hour, at 8.3. The fog was thick at this time. I could not see more than 20 or 30 yards; it had been coming on since 6.30. The empty train had passed down at 7.50 p.m.

3. *John Bateman,* platelayer 11 years.—I live about a mile from Hexthorpe junction, and seeing the night was turning foggy, I left home about 7.30, and went to the junction cabin, and as soon as I had got my lamp and some fog signals I started, soon after 8, to attend to the down-home-signals. I heard the coal-train coming up and the passenger-train coming down, and I ran towards the latter, and had not got quite so far as the down-home-signal when the engine passed me, I having turned a red light towards the driver. The fog was very thick at the time. The speed was quickish. The tail of the train stopped about where I was. I then went on towards Doncaster to protect the passenger-train, and passed the down-distant-signal where I saw no one in attendance. I could see the light of the signal a short distance off; it was showing a good red light. The fog came on very suddenly.

4. *Charles Dace,* inspector in Hexthorpe coal yard.—At about 7 o'clock, as a fog was coming on, I instructed ganger Symonds to send men out fogging. One of

these men should have gone to the Hexthorpe junction down-distant-signal. I believe these men were sent out as soon as possible.

5. *James Symonds*, ganger.—At about 7.15 p.m., when at home, I received a message from inspector Dace, saying that fog signalmen were to go out. I first sent a man who lived near me to the home-signals at Cherry Tree; I then came into Doncaster, and sent another man to Cherry Tree down-distant-signal; then I had to go about two miles to get another man for Cherry Tree up-distant-signal; I then got ganger Shaw to go to the Hexthorpe down-distant-signal. It had just turned 8 o'clock when Shaw and I got on to the line, the passenger train having passed a minute or two previously. I left Shaw at the down-distant signal, where he remained till 9 o'clock, when he was relieved by another man. While at the down-distant-signal I saw platelayer Bateman pass along, but I don't think he saw us.

6. *Timothy Hives*, driver 16 years.—I was coming from Wombwell Main to Hexthorpe yard with a special train of about 27 mineral waggons and a van. I found the up junction distant-signal against me, but the home-signal, when I got to see it (about six yards off) was clear, my speed being then about five miles an hour. On seeing the signal clear I put on steam, and in about two minutes after the collision occurred. No time was lost after I got the signal in proceeding to the yard. My speed when struck was about six miles an hour. I was not aware that an empty train had just crossed before me. I did not hear the passenger-train coming, and saw it only about 10 yards off, just as my engine had cleared the down-main line. The engine of the passenger-train just cleared the end of my engine (which was running tender first), and struck the first coal waggon. My engine broke away from its train. I think the speed of the passenger train was 12 to 15 miles an hour. Its engine was reversed when it struck. The driver said he had not seen the signals.

7. *Charles Green*, fireman 3½ years.—The Hexthorpe junction up home-signal was on when I first saw it, but it was taken off as we approached it. It was visible for 20 or 25 yards. We did not come to a dead stand at all. Our speed at the home-signal was 10 or 12 miles an hour, and steam was put on, on seeing the signal taken off. I saw the passenger train only from 10 or 12 yards off. We neither of us jumped off.

8. *Edward Carlisle*, driver 14 years.—I had brought in the passenger train from Cleethorpes to Doncaster, and left Doncaster for Penistone at 8.1, 11 minutes late. My engine was a 6-wheeled one, four coupled, with a tender, running engine first. Fireman George Thompson was alone with me on the engine. I got the starting signal, South Yorkshire junction signals and Cherry Tree distant and home signals all off. On account of the fog I drew up very steadily to the Cherry Tree cabin to make sure the road was clear, and I got a white hand-lamp from the signalman there. The next signal I should get would be the Hexthorpe down-distant-signal, in clear weather visible from Cherry Tree junction; but this night, on account of the fog, I could not see it, and don't know whether it was off or on. I had put on steam on passing Cherry Tree, but could not get up much speed, as the rails were greasy. My fireman was on the front of the engine sanding, the sand pipes not working properly from the foot-plate on account of the weather. My speed on passing the distant-signal, the post of which I saw, was about 15 or 16 miles an hour. When my mate came back I told him I had missed seeing the distant-signal, and to keep a good look-out for the home-signals; but we both missed the home-signals, and the first thing I saw was a red light held from the ground, and I had time to shut steam off, reverse, and get on back steam, and my mate to apply his break, when we struck the mineral-train, at a speed of 10 or 12 miles an hour. We neither of us jumped off. We were not much hurt, but got a good shaking. All the engine wheels were off the rails from mounting the coal trucks. The buffer plank, one buffer, smoke-box door, both sand-boxes and sand-rods were broken, and the motion-plate bent. I had not shut off steam, though I had slacked speed from the time I had passed Cherry Tree, up to seeing the red hand-lamp.

9. *George Thompson*, fireman two years.—We passed Cherry Tree box at about 12 miles an hour; I was putting fire on, and did not see what signals we got. When we passed the Hexthorpe distant-signal I was on the front of the engine sanding; the left-hand dry sand handle was out of order. When I came back to the foot-plate the driver told me he had not seen the distant-signal, and that I was to hold her up; but he said nothing about the home-signals. I put my break on at once, but before I had time to get it properly on, the collision took me unawares; the driver had reversed and got steam on. The speed at this time was about 12 miles an hour. I did not jump off. I did not see the head lights of the coal engine before the collision.

10. *Charles S. Kayman*, passenger guard 4 years.—I was in charge of the 7.50 p.m. train from Doncaster for Penistone on the 15th. It consisted of nine vehicles, including two horse-boxes, one carriage truck, and two break vans, with one guard, viz., myself, in the rear van. There were no continuous breaks on the train. I left at 8.1, 11 minutes late, having been detained on the journey from Cleethorpes eight minutes, and an extra three minutes at Doncaster, attaching vehicles. We were not travelling so fast as usual, on account of the fog, which had prevailed more or less from Grimsby, but was thicker about Doncaster. I saw the home-signal at Cherry Tree showing clear, and I saw the signalman give a white light. I could not see the Hexthorpe junction down-distant-signal nor the home-signal, and the collision took me unawares; my break was off; the speed was 10 to 12 miles an hour. I was knocked down, but very little hurt. No carriages were off the rails. The off side of the carriage truck (next the engine) was broken.

This collision was caused by the want of proper care on the part of driver Edward Carlisle, (an experienced driver of 14 years' service, perfectly acquainted with the line,) in charge of the passenger-train; he admits that he passed the Hexthorpe junction down-distant-signal (of which he could see the post, but not the light) at a speed of 15 or 16 miles an hour, and then, instead of moderating his speed and approaching the junction with the caution required in such a fog as was said to be prevailing, ran with evidently great violence, at a point 60 yards inside the home-signal, into a mineral train which was crossing the junction.

There does not appear to have been more time consumed than was reasonably sufficient for the fog-signalmen to get to their posts; even supposing a man had been at the down-distant-signal when the passenger-train passed it, it is doubtful whether the driver would have paid more attention to him than he did to the signal, which, not having seen, he was bound to assume was at "danger."

There is, however, no doubt that the subject of fog-signalling—especially as regards the time occupied in the men reaching their posts when a fog suddenly comes on—is a weak point in railway working, and it is greatly to be desired that some really trustworthy mechanical fog-signal could be introduced.

Had the block-system been in force, and properly worked, so as to prevent two trains, which can come into collision, approaching a junction simultaneously, the collision would have been prevented.

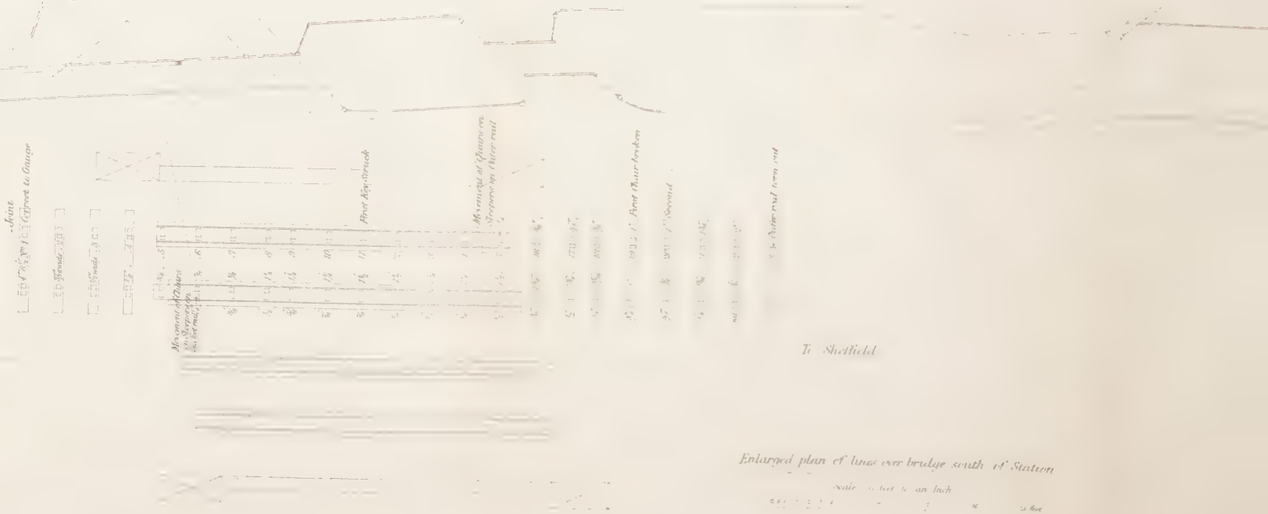
MIDLAND RAILWAY.

HEELEY STATION.

Site of Accident, November 22nd 1876.

Scale 20 feet to an Inch





Enlarged plan of lines over bridge south of Station

Scale 10 feet to an Inch

To accompany Capt^n Tyler's report
dated 25^th Nov^r 1856.

PLATE N^o 2.

MIDLAND RAILWAY.

SECTION OF CHESTERFIELD & SHEFFIELD LINE.



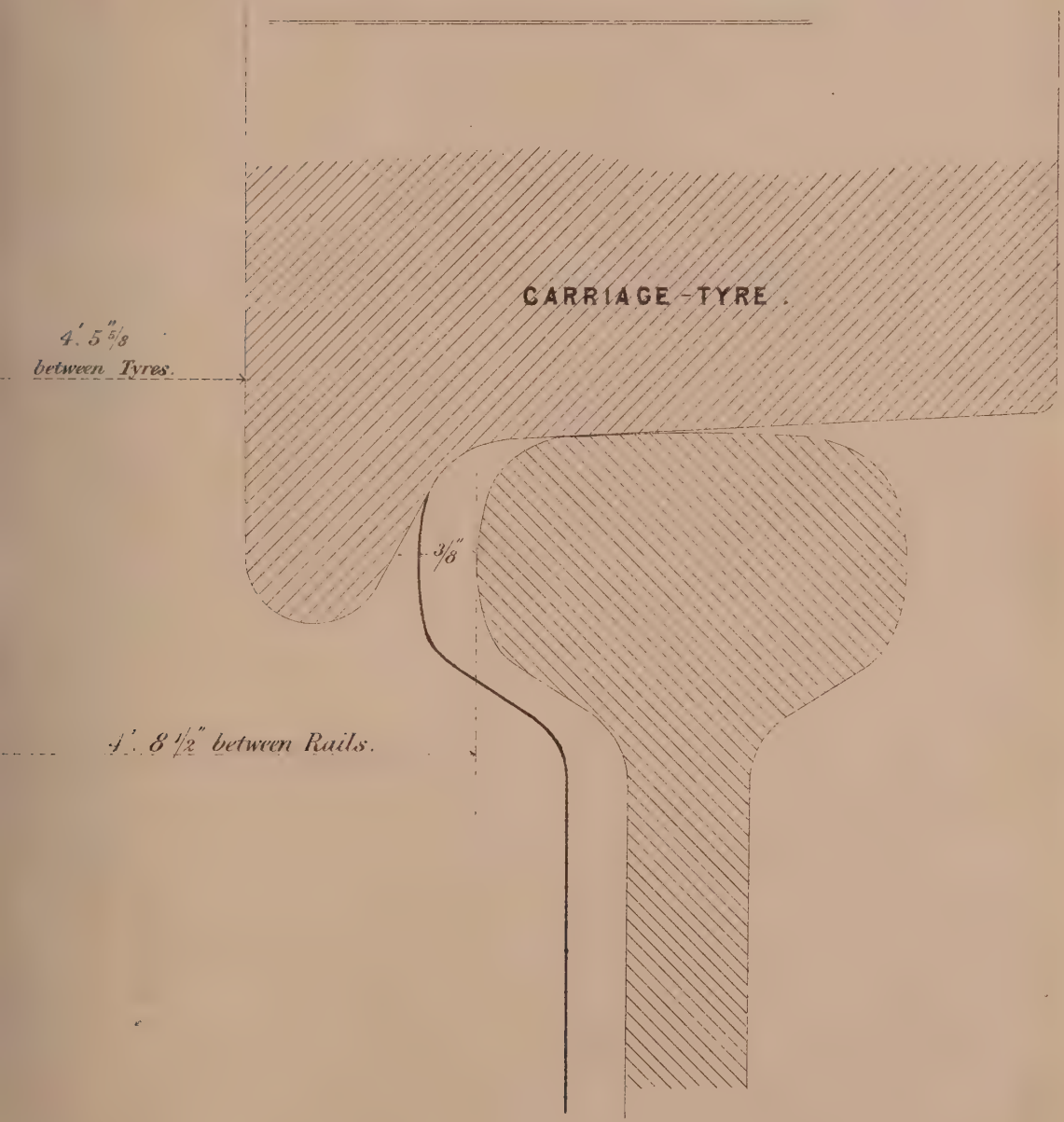
To accompany Capt.n Tyler's Report
dated 23rd Novr, 1876.

PLATE Nº 3.

MIDLAND Ry

ACCIDENT AT HEELEY.

Section shewing relative position of Tyre & Rail.



OUTLINE OF ENGINE & TENDER Nº 1303.

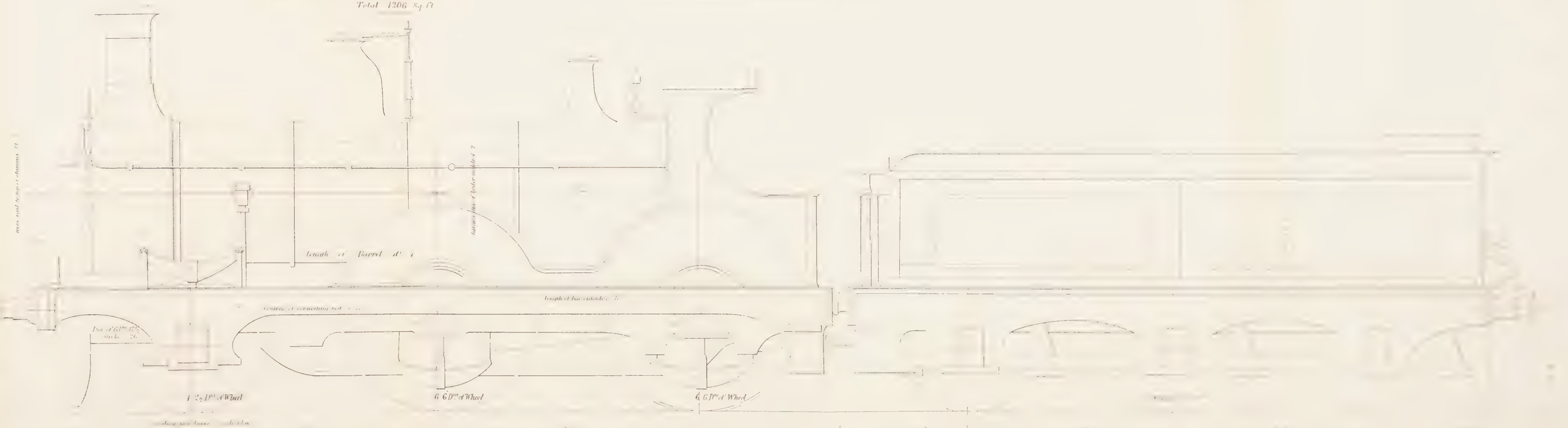
To accompany Captain Tyler's Report dated 22nd November 1856

PLATE Nº 1.

TOTAL MILEAGE OF ENGINE 5953 MILES.

Heating surface Firebox 110 Sq ft
222 1¾ ext diat tubes 1096
Total 1206 Sq ft

Capacity 2760 Gallons
3 Tons Coal



total weight of Engine in working order
tons cwt qrs
37 2 3

Maximum
total weight of Engine & Tender.
tons cwts qrs
70 8 3

Weight of tender in arriving at Horley
tons cwt qrs
24 1 0
36 6 3

Had even the bell-communication been in operation between the South Yorkshire junction and Cherry Tree, the collision might also have been prevented, as the signalman at Hexthorpe junction would then have had earlier intimation of the whereabouts of the passenger-train, and would at any rate have had the opportunity of detaining the mineral-train until the other had passed.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

C. S. Hutchinson,
Colonel R.E.

Printed copies of the above report were sent to the Company on the 22nd December.

MIDLAND RAILWAY.

Sir, *Sheffield, 23rd November* 1876.

In compliance with the instructions contained in your minute of yesterday, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred at 1.0 a.m. yesterday morning to the 9.15 p.m. express-train of the 21st instant from St. Pancras for Scotland, near the Sheffield station on the Midland Railway.

The above train was approaching the Heeley station, about a mile on the south of Sheffield, at a speed, according to the engine-driver, of 60 miles an hour, when the wheels of the leading bogie-truck of a Pullman car,—"the Australia,"—the third vehicle behind the tender, dropped in between the rails. The permanent-way was then torn up for a distance of 213 yards, and at the end of 256 yards from the first point of disturbance the Pullman car fell on its side, foul of the up-line. Its leading truck lay opposite to it against the down passenger-platform, constructed of wood, of the Heeley station; and its trailing truck also rested against the platform, but in the rear of it. The five vehicles behind this Pullman car also left the rails, and some of them ran upon and destroyed the down passenger-platform, whilst others were brought to a stand at the side of the platform or south of it. The accompanying diagram, No. 1, shows the positions in which the above vehicles were found after the accident. The engine and tender, the leading break-van, and a Midland bogie-carriage behind it, also shown in the diagram, ran forward for about 600 yards past the station; and the only wheels of any of these vehicles which were found off the rails, were the four trailing wheels of the trailing truck of the bogie-carriage.

Thirty passengers are said to have been riding in the train, and of these five have complained of injury.

The guard of the train was also injured.

Description.

The line at the south of the Heeley station is, as shown in diagram No. 2, on a curve, with a radius of about a mile; and the Heeley station is approached for about 4½ miles on a falling gradient of 1 in 100, which is continued beyond the station, there being a short portion of 1 in 120, falling in the same direction, for 200 yards through the station. The permanent-way is laid with double-headed iron rails, weighing 83 lbs. to the lineal yard, fished at the joints with ordinary fish-plates and four screw-bolts. The chairs are all of cast-iron, weighing 34 lbs. each, and are secured to the sleepers by wrought-iron spikes, two in each chair. These spikes are twisted, and are ⅞ of an inch in diameter, and 6 inches long. The sleepers are rectangular, measuring 10 inches × 5 inches in section, and are spaced a little less than a yard apart. There is a bridge on the south of the Heeley station, constructed with wrought-iron girders, covering a span of 25 feet, on stone abutments. There are twin girders under each rail, tied together by bolts, and strutted; and a balk of timber, 16 inches square, embedded in the girders, carries the chairs. The chairs on these timbers were, at the time of the accident, similar to the chairs on the remainder of this part of the line.

The train in question consisted of an engine, No. 1303, and tender; a break-van, No. 438, on four wheels; a Midland composite-carriage, No. 630, on two six-wheeled bogie-trucks; a Pullman-car, the "Australia," on two four-wheeled bogie-trucks; a six-wheeled composite-carriage, No. 912; a Pullman-car, the "Excelsior," on two four-wheeled bogie-trucks; a six-wheeled composite-carriage, No. 901; a four-wheeled composite-carriage, No. 610; and a guard's van, No. 617, on four wheels. The composite-carriage, No. 630, on two bogie-trucks, weighed 22 tons 16 cwt., and each of the Pullman cars weighed 21 tons 9 cwt. 1 qr., when empty.

The engine, No. 1303, diagram No. 4, was a six-wheeled passenger-engine, with the driving and trailing wheels coupled together, and with cylinders 17½ inches in diameter, by a stroke of 26 inches. It had run, up to the time of the accident, 5,953 miles. The leading wheels had a diameter of 4 feet, and the four coupled-wheels a diameter of 6 feet 6 inches. The weight on the leading wheels was 12 tons 10 cwt. 3 qrs., on the driving wheels 13 tons 13 cwt. 1 qr., and on the trailing wheels 12 tons 4 cwt. 3 qrs., making a total of 38 tons 8 cwt. 3 qrs., in working order. The tender ran on six wheels, 4 feet in diameter; and, when fully loaded with coal and water, its maximum weight was 32 tons. Its weight on approaching Heeley, after running 58 miles, is estimated at 24 tons. The wheel-base of the engine was 16 feet 6 inches, and that of the tender 13 feet, from leading to trailing axles. The engine and tender were almost new; and are represented to have been in first-class order, and to have run very steadily; and the other vehicles were all new in 1876, except one composite-carriage, No. 910, which began to run in September 1875, and the Pullman car, "Excelsior," which began to run in March 1874.

Evidence.

Laurence Burns, the engine-driver of the 11.55 p.m. passenger-train from Derby to Sheffield (preceding the train to which the accident happened) on the 21st November, reached Sheffield at 12.46 a.m., right time. He noticed nothing unusual in the running of his engine on approaching Heeley or passing it. He thinks he passed the Heeley station at a speed of about 45 miles an hour. He was driving No. 43 passenger-engine. It was a four-wheel-coupled engine, with a 17-inch cylinder, by a stroke of 24 inches. The driving-wheels were 6 feet 2 inches in diameter.

Joseph Brooke was driving the London portion (to which the accident happened) of the Scotch-express-train. He left Leicester at 11.37 p.m. on the 21st, and Trent at 12.9 a.m. on the 22nd November, one minute late. He was not due to stop between Trent and Sheffield. He had very little steam on after passing the Bradway tunnel, and he came without steam from Ecclesall to Heeley, but he believes he approached the Heeley station at a speed of about 60 miles an hour. He observed nothing whatever unusual until he approached Heeley. Just before he reached that station the first thing that attracted his attention was that his engine appeared to drop, and give a wriggle; and then, after two

or three oscillations, the engine recovered itself and went steadily forward. The communication-cord next became stretched, and the engine-whistle was opened very slightly. He felt that the Westinghouse break, which is automatic, became applied. This made him suppose that part of his train had broken loose. It was pitch dark. He did not know what had happened, and allowed the breaks to remain on, and only reversed his engine shortly before it came to a stand. He did so because a passenger riding in the bogie-carriage began to tug at the communication-cord. He found no mark whatever on the leading wheel-tyres of the engine, but on the left driving-wheel tyre he found a bright mark, all round the outside of it, as if, in consequence of unusual oscillation, it had rubbed against the splasher. He went forward to Leeds with the same engine, but with a newly marshalled train. He also ran the same engine last night between Shipton and Leeds, and it is in good order in all respects. It is a new engine, and he considers it to be a remarkably smooth-running one. He never had one that he liked better. He has been an engine-driver in the Midland Company's service since 1864, and has been running this fast express train ever since the Scotch traffic was commenced on the Midland Railway, on the 1st of May last. The drop which he describes as having felt on the south of the Heeley station was such as he sometimes experiences in going over a bridge. What he felt on this occasion was, however, something quite exceptional. About three months since, the road running through Heeley was not as nice as it ought to be, and he mentioned it to his foreman, and the road was then set right. He ran better on the road afterwards. As a rule, when he finds bad places, and knows them to exist, he eases his speed. He had not recently noticed any unusual motion of his engine in going over the same spot. He felt the break applied as he was passing through the station.

Samuel Lester was fireman with the last witness, and left Leicester with him at 11.30 p.m. on the night of the 21st inst. He felt the engine roll a little on the bridge on approaching the Heeley station, and was thrown against his mate; and when he looked up to see where he was, he found he was near the signal-cabin at the Heeley station. He looked round and saw fire flying from the wheels, but he thought it was because the breaks had been applied. He confirms otherwise the statement of the engine-driver in all respects.

James Urie, a guard in the employment of the North-British Company, working joint trains between the North-British and Midland systems, has been performing that duty with fast trains between London and Edinburgh for about seven months. He was acting as under-guard to the train leaving St. Pancras at 9.15 p.m. on the 21st November. He left Trent at 12.8 a.m. on the 22nd. He was riding in the break-van next behind the tender. On approaching Heeley he was standing up in his van, getting ready the parcels to deliver at the Sheffield station. The train was running at a high speed, he thinks about 50 miles an hour. His windows were all shut. It was the usual speed in coming down that part of the line. He felt his van give a very unusual jerk, and he immediately applied the air-break and looked out at the off side. His van recovered itself, and went along all right again. Looking back he saw fire flying, as he thought at first, from the break. He had no idea that any wheels of the bogie-carriage behind him were off the rails until after that carriage had come to a stand; and he did not know that any carriages behind the bogie-carriage had broken away, or that anything had happened to them, until his van came to a stand. He went back to examine the carriages, and found them lying about at Heeley, but he did not go beyond that station to examine the permanent-way.

Joseph Clulow was head-guard of the train in question, in the employment of the Midland Company. He has been running with the fast trains between London, Edinburgh, and Glasgow since the 1st of May 1876. He was riding in the hind van from London until the accident happened. The train left London at 9.15 punctually; and Kentish Town, Bedford, Leicester, and Trent, the only stopping places, all to correct time. The train lost a minute and a half or two minutes in rising the bank towards the Bradway tunnel, and, after passing through the tunnel, it ran down the incline at high speed, but not at an unusual speed. They always ran down there moderately fast, say at about 50 miles an hour. He called 60 or 65 miles an hour a very high rate of speed. The first thing that attracted his attention on approaching Heeley was that the air-break was suddenly applied. It caused his van to jolt for half a dozen yards, or perhaps more, and then he found that the van was off the rails, and began to jump about very much; and the van struck a piece of timber, he thinks on the down side, and it then turned across towards the down-main-line. The van came to a stand near the signal-cabin, he can hardly say in what position. He was stunned. He worked a train through to Glasgow that night, and a train back to London on the following night, but he has felt rather the worse for the shock since. He did not examine the road or anything else, but went back at once to the next signal-cabin to protect his train. He does not think that the speed had been slackened at all at the time of the accident. He did not apply his break. According to the best of his recollection he felt his brake applied just before his van left the rails.

Henry Harrison is employed as timekeeper on the Midland Railway between Sheffield and Chesterfield, and has been doing that duty for seven years. He came down to assist the permanent-way men, and brought his gang of 15 platelayers with him to assist in putting the road right after the accident. He reached Heeley about 8.30 on the morning of the 22nd inst. He found Mr. Smith, inspector of permanent-way for the district, in charge when he arrived, and the men were already at work. He and his gang at once began to take out the damaged rails, and sleepers, and chairs, and put new ones in their places. He began first at the Heeley station. He believes that at the point where the first disturbance occurred the permanent-way had not been touched before he arrived. The road was left at that point in the same condition until Mr. Johnston, the engineer of the line, and Mr. Payton, the permanent-way superintendent, arrived. He put in four or five wooden plugs in the balk of timber on the bridge south of Heeley station on the off side. He is certain he put in four or five himself. He saw William Johnson put seven or eight plugs in. He can thus answer for about a dozen plugs having been put into that balk. They were put into the holes where the spikes had come out, which spikes were in the chairs at the time of the accident.

Richard Smith is inspector of permanent-way from the 23 miles 40 chains post from Derby, which is near Chesterfield, to the 30 miles 40 chains post, which is near Eckington, and then again from Tapton junction to Grimesthorpe, which is 13 miles 20 chains. This includes Heeley and Sheffield. He has, altogether, 25½ miles of main line, besides colliery branches, under his charge as inspector. He lives close to the Sheffield station, and was called up about half-past-one a.m. on the 22nd. He reached the spot, he thinks, a little after 2 o'clock. He went at once to the point where the permanent-way was first disturbed, to examine it. The first disturbance that he observed in the permanent-way, in the direction in which the train was travelling, was a chair on the south end of the bridge, and on the off or left side. It was a little knocked out of its place on the sleeper; he did not measure how much. Both the spikes in the chair were bent outwards. They were both in the chair, and neither of them was broken. The same thing had happened all the way over

the bridge on the off balk. All the chairs were pushed outwards. All the spikes were either drawn or bent, and all the chairs displaced. That effect was at its worst about the centre of the bridge. He measured the distance which the chairs had given way. One had done so for $\frac{5}{8}''$, and another for $\frac{7}{8}''$, but he could not say which chairs they were. No spikes were broken or missing. On the north of the bridge there were three lengths of rails all in their places, with the spikes not drawn at all. The chairs on the north of the bridge on the off side were all complete in their places for about three lengths of rails. The chair on the near side of the sleeper south of the bridge was in its place all right. The chairs on the near balk on the bridge were in their places at the south end, but had sprung out towards the north end. The spikes had sprung up in three chairs, and these chairs were a very little shifted on the balk. The last chair on the near-side balk north of the bridge, which was on a high packing on the top of the balk, had shifted out of its place to the extent of nearly a quarter of an inch. The spikes had sprung, and from that point forward the chairs were more and more shifted outward on the sleepers, and the third and fourth chairs from the bridge had the tops broken off the inside jaws. Then there were several chairs with marks on the top of the inside jaws, and the keys split, as if something sharp had gone over them. At the joint 20 feet from the bridge a bolt was broken, and the other three bolts were marked; then the inside jaws of three chairs were again marked on the top, and the keys similarly split. The chairs from that point forward were all broken. The bolts of the rail-joint next in advance (on the near side) were also broken, and from that point forward the chairs were broken, and the rails canted out, and the road on that side was destroyed. He was walking over this part of the line on the Friday previous, about four days before the accident. On the same curve, a mile to the southwards, he had given directions for putting it into gauge about a fortnight previously. The outside rail of the curve had been pushed outward a little. That was the only time that he had specially to send for men to correct that part of the line. He has had the heavier chairs placed on the rails a little northwards to where the accident took place, because the lighter chairs were knocked out of their positions.

John Johnson has been employed about five years as platelayer, excepting for about six months when he left the Company's service. He is just turned 16. He came by train from Chesterfield, and reached the site of the accident about 9 o'clock. He does not know what he did when he got there. He was about an hour before he went away. He was assisting to take out sleepers, and put others in the place of them, and taking broken chairs off. He returned to work there on the following day, and was there at 2 o'clock. He is quite sure he did not drive any wooden plugs. He is quite sure he did not drive any bits of wood in to fill up old holes. He remembers, on being told by Harrison, that he was taken away from the rest of the men he was working with, and was told to drive plugs into the old holes on both sides of the bridge south of Heeley. He drove in about 8 or 10. He is quite sure he himself drove in six into the balk on the left side, and either two or three on the other side.

Anthony Payton is superintendent of the permanent-way on the main-line from Derby to Leeds, and on certain branches. He was at Chesterfield when the accident happened, and was called up at 5 a.m. He left Chesterfield at 8 o'clock, and reached the site of the accident about 9 o'clock. He considers that the evidence given by Smith describes accurately the state of the road as he saw it after the accident. The figures marked on the enlarged portion of the diagram (No. 1) produced show the measurements which he took on the spot after the accident. The middle figures on the sleepers, and between the balks on the bridge, describe the amounts to which the rails were wide to gauge. Those on the left side describe what appeared to be the clear displacement of the chairs at the time of the accident. The sleepers, numbered 2 to 23, are all those on which the chairs were disturbed until the permanent-way was destroyed. On the bridge, and south of it, the displacement of the chairs occurred on the off side only, excepting for one chair at the north end of the bridge. On the north of the bridge the displacement of the sleepers and chairs occurred on both sides. He was not aware that any of the holes in the balk had been plugged. He is not quite sure whether he did not see one plug being driven into the balk.

William Law is ganger of the permanent-way, employed by the Midland Company. He has charge of the permanent-way near the Heeley station, and between Ecclesall and the East-Bank tunnel-end, a length of two miles. He has three regular men besides himself, and sometimes extra men. He lives close to the scene of the accident, and was on the spot at 1.15 a.m., about 18 minutes after it occurred. He first got a lamp and examined the train, and could not find any passengers except those that had got out of the carriages. He then went to the bridge to ascertain how the accident occurred. He found that something had forced the road out on the bridge, but could not say what had forced it out, except it was the carriage that was not right. About 40 yards south of the bridge he found, three weeks before, that the road had got wide to gauge, about half or three quarters of an inch, and he therefore put in some heavier chairs, with four fastenings in each, and corrected the gauge. He found, some months ago, the gauge getting wide on the same curve, and corrected it. He has never found the chairs shifting on the bridge before.

Richard Coverley was the signalman on duty at Heeley on the morning of the 22nd inst. He received "Be-ready" from Beauchieff at 12.55 for the train in question, and "Train-on-line" at 12.58. The train would then be passing Beauchieff, and it reached him as nearly as possible at 1 o'clock. Beauchieff is 2 miles 11 chains from him. The train generally takes from two to three minutes to run from Beauchieff to his post, but sometimes only two minutes, according to the signals he receives. Its proper time for passing the Heeley cabin is 12.57, it being due to reach Sheffield at 1 o'clock. He stood on the stage outside the cabin, and watched the train approach. As soon as he had turned the distant-signal to danger he observed sparks fly, at a point where some portion of the train appeared to have left the rails. He put his home-signal to danger as the engine passed him, and he then heard a curious rumbling noise. He got one foot in the doorway to step into the box, and remembers nothing more for a couple of minutes. He then got up, and got to the door of the cabin, and found it had been shifted, and the stage torn away. As soon as he recovered himself he called the attention of Sheffield, and blocked the line, with his telegraph-needle. It was already in block towards Beauchieff. He has not suffered since the accident.

John Birkin will have been station-master at Heeley for two years on the 18th of next month. He was not up at the time of the accident. He lives within about 100 yards of the station. His signalman called him up at 1.5 or 1.6. He immediately got up and dressed, and went out to see what was the matter, and enquired whether the line was blocked in both directions, and found that had been done. He then wired to all heads of departments to advise them of the accident. He made a thorough search, and found no one under the carriages. He cannot give evidence as to the state of the permanent-way.

Conclusion.

This Scotch-express-train was, then, running, according to the engine-driver, at a speed of 60 miles an

hour as it approached the Heeley station, and the engine-driver and fireman experienced, whilst travelling in due course at that speed, a sudden and unusual motion of the engine which told them unmistakeably that something was wrong. The condition of the permanent-way after the accident was seen by the superior officers of the different departments, who described their impressions to me on the spot, as well as by the witnesses whose evidence is above quoted in detail. There is no question or doubt as to what that condition was. The wheels which first left the rails, had not mounted the rails, but had dropped inside of them. The spikes which secured the chairs to the longitudinal timbers across the bridge, and to the three sleepers next them at each end of it, on the south of the Heeley station, had been more or less disturbed, drawn, or bent. The chairs under the rails had been shifted, and the gauge between the rails had been widened out, as shown in the enlarged portion of diagram No. 1. As frequently happens in such cases, the engine, the tender, and the leading vehicles, by which this damage was produced, ran forward without leaving the rails; but the fastenings of the chairs to the timbers having thus given way, the chairs, some of which rested on packing-pieces, had been moved outwards, the rails had been spread, first to the right by the effect of centrifugal force, and then partly to the right and partly to the left from the resulting effect of oscillation; and the gauge between the rails had been widened to such an extent as to allow the near wheels of the leading bogie-truck of the first Pullman car, "the Australia," to drop inside the near rail. These wheels in their progress forward then fractured the chairs, tore away the fish-bolts, and destroyed the permanent-way. The coupling between the "Australia" and the Midland bogie-carriage in front of it having given way, the signal-post and signal-cabin were struck by the "Australia," which ran forward and fell on its side; and the following vehicles came to a stand, mostly on the down-passenger-platform, in the positions indicated in diagram No. 1.

In examining the line on the same curve, to the south of the bridge near Heeley, for about 500 yards, I found that the same tendency was clearly apparent. The higher rails of the curve and the chairs under them had been moved outwards by the weight and speed of the trains passing over this part of the line; and the above evidence of the inspector and ganger of the permanent-way also points to the necessity which has been found for repairs on account of this action. Further southwards the line had been relaid with steel rails, weighing 83 lbs. to the lineal yard, on cast-iron chairs weighing 40 lbs. each, secured to the sleepers by two wrought-iron spikes and two trenails in each chair. The sleepers, also, on this part of the line had been placed rather nearer together, in the proportion of nine to a 24-ft. rail in place of seven to a 20-ft. rail. The portion of line on which this accident occurred was only opened for traffic in February 1870. I noticed that some of the sleepers required renewal from being fractured, but they were generally in good condition, and not decayed. There was, however, unmistakeable evidence of the tendency of the chairs to shift outwards on them under the high rail of the curve.

This accident has, then, clearly been caused by the failure of the fastenings between the chairs and the sleepers, under the weight of an engine and tender weighing together 70 tons when fully loaded,—or, say 62 tons 8 cwt., after a consumption of coal and water due to running 58 miles, at the time of the accident,—and travelling over the line at a speed of say 60 miles an hour. The engine-driver and fireman plainly felt the rails and chairs giving way under the engine; and it was the damage thus occasioned to the permanent-way during the passage of the engine, tender, and leading vehicles, which caused the gauge between the rails to be widened out or spread sufficiently to admit of the near wheels of the leading truck of the Pullman car "Australia" dropping inside the near rails. The weight on the six wheels of the engine having been 38 tons 8 cwt. 3 qrs., spread over a wheel-base of 16 ft. 6 inches; and the weight on the eight wheels of the Pullman car having been 21 tons 9 cwt. 1 qr., spread over a much longer wheel-base, it is obvious that the strains produced on the permanent-way by the engine greatly exceeded those produced by the Pullman car. On the other hand, the employment of vehicles of this description tends materially, in proportion to their strength, to diminish the danger, when accidents occur, to passengers riding in them. The hold of the fastenings in the sleepers may have been, and no doubt was, rendered less secure in consequence of the action of previous heavy and fast traffic. The Company have, near the spot, as already explained, been adopting the remedy which is required to prevent accidents of the same sort in future, by placing the sleepers nearer together, employing heavier chairs, and using four fastenings in place of two in each chair; and they are about to relay the piece of line on which the accident occurred in a similar manner, the rails being already on the ground for the purpose. It is desirable that until this relaying has been completed, the speed of such trains in passing the Heeley station should be very considerably reduced; and this may the more easily be arranged, inasmuch as all trains stop at the Sheffield station.

This accident, though fortunately unattended with loss of life, is not the less important in illustrating the necessity, on which it has been my duty of late so strongly to insist in other parts of the country, and in reference to other systems of railway, for constantly maintaining in high condition any portion of permanent-way on which trains are run at high speed. This necessity is not so generally or so well understood or appreciated as it ought to be. Safety is, as I have often remarked, principally a question of margin. Just as an iron bridge requires to be four or more times as strong as is necessary to prevent actual fracture, so also every portion of permanent-way ought to be constantly maintained in all respects so as to be far beyond the risk of actual failure. Movements of the chairs on the sleepers, and the widening of the gauge, under the passage of the trains, are in themselves indications, not to be neglected, that the necessary margin of safety is not being maintained: and the liability of a permanent-way to become weaker in various respects, with increasing age, and constant wear and tear, should be always remembered, and carefully counteracted.

I have, &c.,

The Secretary
(Railway Department,)
Board of Trade.

H. W. Tyler.

APPENDIX.

Scotch Express, 9.15 p.m. down from St. Pancras, November 21, 1876.

Composition of train when accident happened.

Vehicles.	No.	Number of Wheels.	Weight. Tns. cwt. qr.	Age.
Engine and tender	1303	12 wheeled	62 8 3	5,953 miles
Guard's van -	38	4 „	8 4 0	Aug. 1876
Bogie compo.	630	12 „	22 16 0	July 1876
Pullman car -	Australia	8 „	21 9 1	July 1876
Compo. - -	912	6 „	10 11 0	April 1876
Pullman car -	Excelsior	8 „	21 9 1	March 1874
Compo. - -	901	6 „	10 11 0	April 1876
Compo. - -	910	4 „	9 1 0	Sept. 1875
Guard's van -	617	4 „	8 4 0	April 1876

All fitted with Westinghouse automatic break.

Printed copies of the above report were sent to the Company on the 19th December.

NORTH-EASTERN RAILWAY.

Board of Trade,
(Railway Department,)
Whitehall, 14th November 1876.

SIR,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of yesterday, the result of my inquiry into the circumstances connected with the collision which occurred on the 9th inst., at West Hartlepool station on the North-Eastern Railway.

In this case the 12.30 p.m. passenger train from East Hartlepool to West Hartlepool, when close to the latter station, was improperly turned through facing-points into a crossing leading to the goods yard, and came (25 yards from the points) into collision with a train of empty timber trucks proceeding from the goods yard to a timber yard.

No complaints of injury have been received from any passengers, nor were any servants of the Company injured.

A buffer and buffer beam, footboard, and axle-box of the engine of the passenger train were broken; two carriages and five waggons were also slightly damaged.

The signals protecting the entrance to West Hartlepool station from the East Hartlepool direction are at Church Street junction, about 110 yards from the stopping place of the engines of passenger trains. There is a raised signal-cabin at the junction, in which there are four point levers and 11 signal levers, but there is no interlocking between the points and signals, and the apparatus is of a very antiquated character. For trains approaching from East Hartlepool there are home-signals for the station and goods yard and a distant-signal; the former are close to the cabin and to the facing points leading to the goods yard. The line is full of curves, and a driver's view as he approaches the facing-points is very limited.

The following is the evidence bearing on the collision.

1. *John Pennoch*, signalman 12 months, three months at Church Street junction, West Hartlepool.—I came on duty at 6 a.m. on the 9th for 12 hours. The last time a train had passed over the points previously to the passenger train which met with the collision, was a goods train from the goods yard for East Hartlepool at 12.4 p.m. I was expecting the passenger train due at 12.40 p.m. I had lowered both home and distant signals about four minutes before it was due, but I did not set the points right for the station previously, having accidentally omitted to do so. Two minutes before the train was due, on receiving the bell-signal from Greenland crossing, I saw the points were wrong, and I was going to shift them, having got hold of the lever for the purpose, when my attention was taken off by some boys who had come on the line close to the points, and whom I could not get to come back, though there was a goods train approaching in the opposite direction. My attention continued to be taken up by the boys till the passenger train was about 20 yards off, and then, still forgetting that the points were wrong, I stood looking on and saw the train take the wrong road, when it was too late to do anything. I believe the driver saw the mistake before he got to the points, as he shouted, but I thought he was shouting to the lads. I was all alone in the cabin at this time. There are four point levers in the cabin. There are also 11 signal levers quite distinct from the point levers. The collision occurred at 12.36 p.m.

2. *Jonas Cansfield*, driver 11 years.—I was driving the 12.30 p.m. passenger train from East to West Hartlepool. It consisted of a six-wheeled tank-engine running chimney first, and five vehicles, including a break-van. We started punctually, and all went right till we neared the facing-points at Church Street junction. The signals were all off for us as we approached, and my attention was first attracted by seeing the points lying open for the goods yard; the signalman was standing by the levers outside the cabin, looking after a boy whom he was ordering off, and whom I saw going towards the empty train. Steam had been shut off a quarter of a mile back, and on seeing the points wrong, I reversed and got steam on, and my fireman applied his break. I shouted to the signalman to set the points right, but he did not understand me, and I struck about six waggons from the engine of the empty train. My engine was not knocked off the road; we neither of us jumped, nor were we hurt. One of the buffers and buffer beam, a footboard, and axle box were broken.

3. *George Pearson*, porter and acting as guard with the 12.30 p.m. train from East Hartlepool.—I was riding in the van which was next the engine, and there were four coaches behind it. I noticed that the signals were all for us to enter West Hartlepool station, and when about 20 yards from the points I heard the driver shout "Switches." I put on my break at once. We struck the other train at a speed of about four miles an hour. I was not knocked down. No one complained. One carriage was slightly damaged and also the van. The time of the collision was 12.39. p.m.

4. *William Bradley*, driver seven years.—I was driving a train of 28 empty timber trucks from the goods yard into the bond yard, and had the signal lowered and the points right for my road. I did not notice anything wrong with the passenger train till it struck my train about seven or eight waggons from the front. I had noticed some boys on the line, and heard the signalman shouting to them, which I also did. My speed on collision was four or five miles an hour. Five waggons were knocked off the road and on to their broadside.

This collision was caused by the carelessness of the signalman at Church Street junction in lowering the signals for the train from East Hartlepool before setting the facing-points, over which that train had to pass, right for the station, they being at the time open for the goods yard.

The signalman could not have made the mistake which led to the collision had the points and signals been interlocked. Church Street junction is, I am informed, one of the few junctions in the northern division of the North-Eastern Railway which still remain to be interlocked; the work would have been undertaken before, but that extensive alterations at West Hartlepool station in connection with new lines are about to be carried out.

I have, &c.,
C. S. HUTCHINSON,
Colonel, R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 28th November.

REPORTS

OF THE

INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT

TO THE BOARD OF TRADE,

UPON

CERTAIN ACCIDENTS

WHICH HAVE

OCCURRED ON RAILWAYS

During the Month of December,

1876.

(PART NINTH.)

Presented to both Houses of Parliament by Command of Her Majesty.
February 1877.



LONDON:
PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
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1877.

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BELFAST AND NORTHERN COUNTIES RAILWAY.

SIR, *Dublin, 24th Jan.* 1877.

IN compliance with the instructions contained in the order of the 27th ultimo, I have the honor to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 26th ultimo, between Antrim and Dunadry stations on the Belfast and Northern Counties Railway.

A passenger train from Cookstown, which was due to leave Antrim at 10.5 a.m., ran into a special goods train from Belfast which was timed to meet and pass the passenger train at Antrim station.

The collision occurred about a mile to the south-east of Antrim station. The passenger train contained about 100 passengers: one lady was killed, five passengers were seriously injured, and three others are reported to have been slightly injured.

The engine-driver and fireman of the passenger train, who jumped off their engine just before the collision, and the engine-driver, fireman, and guard of the goods train, were also hurt. The driver and fireman of the goods-train engine remained at their post, but the guard who was travelling with them on the engine, instead of being in his van, where he should have been, jumped off the engine just before the collision.

The Belfast and Northern Counties Railway is a single line from Cookstown to Dunadry, with loop lines for trains to pass each other, at Cookstown junction, at Antrim, and at Dunadry. There is also a junction with a siding at Moylena, which is close to the scene of the accident.

Dunadry and Antrim stations are a little more than three miles apart; they are protected with the ordinary home and distant signals. Moylena siding junction is protected with distant signals only, which are always kept lowered for trains to pass unless they are required to stop to pick up or leave waggons.

On the 19th ultimo a printed notice (herewith) was issued from the manager's office at Belfast, that a special goods train would leave Belfast for Ballymena on all week days, except Christmas Day, at 8.15 a.m. The notice gave the different hours at which the goods train should leave the different stations on its route, and provided for it to pass the 8.35 a.m. up passenger train from Coleraine at Antrim station. The rules of the Company provide, that in case trains by accident, delay, or any other cause, shall be 20 minutes behind time, the guard of the train that is late shall telegraph to the station-master of the station in advance, where he is timed to cross a train coming in an opposite direction, and notify to that station-master any change in the passing place which the guard of the late train finds necessary. The station-master is directed by the rules to reply to the guard's message, giving his consent to the arrangement; and on the guard receiving that consent, he takes his train to the place decided on by him, and agreed to by the station-master, as the altered passing place. The regulations further provide that the station-master, after making these arrangements, shall obtain from the engine-driver and from the guard of the train (that in consequence of the change is to proceed forward beyond its regular appointed passing place), receipts of written orders having been given by him (the station-master) to the driver and to the guard of the train to proceed forward to the station then appointed by him and the guard as the altered passing place.

The five printed forms issued by the Railway Company for the use of their servants under these circumstances are herewith attached.

The printed notice for the running of the special goods train was duly forwarded and received on the 19th ultimo by the several station-masters concerned. The station-master, signalman, telegraph and booking clerks at Antrim, the engine-drivers, and all who were affected by the special goods train in the present case, appear to have been thoroughly acquainted with the arrangements made from the manager's office. The notice was received at Antrim on the 19th ultimo, and the special train started and made its first journey on the 20th, on which day it passed the 8.35 a.m. up passenger train at Antrim. On the 21st and on the 23rd the special goods train was late, and the passing place was changed on both these days from Antrim to Dunadry station in the authorized manner above referred to, and the five printed forms which had to be filled up when such changes took place, were all duly executed and issued on those days. On the 22nd the goods train passed the passenger train at Antrim station; but on the 24th, it being Sunday, and on the 25th, it being Christmas Day, the goods train did not run. On Tuesday the 26th it started again, and was delayed about 8 or 10 minutes at Dunadry station in consequence of the up mail train, which was timed to pass it at that station, being late. As soon as the mail train passed at 10 a.m. the goods train left Dunadry. The goods train was then five minutes late, when it proceeded towards Antrim. As it approached Moylena, and was running through a deep cutting round a sharp curve where the view along the line was limited to about 260 yards, it met the passenger train running towards it in the opposite direction.

The passenger train, which should have waited at Antrim till the goods train arrived, was timed to leave that station at 10.5 a.m. It left at 10.6, one minute late. It consisted of an engine and tender, three third-class, two composite carriages, and a guard's break-van, with the guard in charge at the tail of the train. It was running at a speed of about 25 miles an hour when the engine-driver sight d the goods train, which was then only about 80 or 100 yards from it.

The goods train consisted of a heavy coupled engine, a tender, a break-van, a waggon loaded with coal, 17 empty waggons, and another break-van at the tail of the train. It was running, with steam shut off, at a speed of about 15 miles an hour, down a falling incline of 1 in 360, when the goods engine-driver first saw the passenger train. He could not say whether he had any time to reverse his engine before he struck the passenger train engine. The two trains met on a short piece of level line at the south-east side of Moylena siding junction. Both engines, as they met end on, were slightly lifted from the rails at their front ends. The passenger engine was considerably damaged, and the goods engine somewhat damaged. A piece was broken out of the rail under the goods engine. The tenders of both engines were damaged and partly lifted up off the rails. The passenger coach next the tender, in which there were fortunately no passengers, was completely wrecked; and the coach next to it, which was a composite carriage, in which the lady who was killed was riding, had the two front compartments destroyed. The rest of the passenger coaches were slightly injured.

It appears that while the passenger train was standing at Antrim, the station-master was engaged at the back of the station, under the booking-office, in taking the record of the gas-meter, which he wished to send to Belfast by that train. He returned to the platform just as the passenger train was starting. He saw the guard jump into the van, and he appears at that time to have felt no doubt but that the goods train had arrived, and that the passenger-train was starting in its proper course.

The telegraph-clerk, who has been employed some time at the station, and who, with the station-master's

sanction, had constantly been in the habit of ringing the bell for the train to start, rung the bell about the proper hour, 10.5 a.m., on the day in question. The guard, who had been in the office, ran out as the bell rang, and gave the signal to the engine-driver to start by holding out his arm, and he then jumped into his van as the train started towards Dunadry. The engine-driver on receiving the signal from the guard whistled; the signalman, who was standing at the east end of the station, near the engine and close to the signal-post, lowered the signal, and the train started on its journey.

The signalman, the engine-driver, the guard of the passenger train, and the Antrim station-master, all of whom were directly responsible for not allowing the passenger train to go before the goods train arrived, appear to have forgotten the existence of the special goods train.

The signalman stated that he had taken off his distant and home signals for the up passenger train to come in to Antrim station, and that he did not put up his back home signal to danger until after the train had gone away.

This man's evidence was very unsatisfactory, both as to the manner in which he worked the signals on this occasion, as well as to his usual method of working the Antrim station signals. He excused himself for allowing the passenger train to go away, by saying that he was not aware that the passing place had not been changed to Dunadry on the 26th, as it had been on the 21st and 23rd; and it appears that he was not necessarily informed when these changes were made, as he should have been.

The engine-driver of the passenger train stated that the Antrim home-signal was not taken off for him to run into the station, but that it was lowered as soon as he whistled for it, when he got the signal from the guard and he thought he was ready to leave the station, and that this was the usual manner in which the up home-signal at Antrim was worked.

The engine-driver further stated that on his arrival at Antrim, he thought of the special goods train which he was to pass at that station, but that he observed the guard going into the office, and then come out and give him a hand-signal to start. This put the goods train out of his head, and consequently he started his train before the goods train arrived.

The guard of the passenger train stated that he had forgotten all about the goods train having to meet his train at Antrim, and that on hearing the telegraph clerk ring the bell, and hearing the booking clerk say to the telegraph clerk, "You are all right, now you may go on," he ran out and gave the signal to the engine-driver to start.

The guard ran past the station-master as he was crossing the platform to get into his break-van.

None of these men appear to have had the slightest misgiving as to the mistake that they were committing, until the collision, which must have occurred about three or four minutes after the passenger train left Antrim station.

The station-master at Antrim, the engine-driver and the guard of the passenger train, have been committed to stand their trial.

All these men have been a considerable time in the Company's service, and bear excellent characters for good behaviour and for diligent discharge of their duties. They voluntarily gave me their evidence after I had warned them that under the circumstances it was optional for them to do so or not as they thought best.

The single line of rails on this part of the Belfast and Northern Counties Railway is worked on the principle of having fixed passing places; giving power to the guards in charge of trains to change the passing places when their trains are more than 20 minutes behind time. The five printed forms which the engine-drivers, guards, and station-masters have to execute in writing and issue are excellent checks in themselves, but there is nothing except the printed notice of any proposed change to remind them of the running of special trains, such as the goods train in the present case. It was the fifth time in seven days that this goods train had been run. On two out of these five times the passing place had been altered from Antrim to Dunadry, and on the two days previous to the accident the special train had not been run at all. The station master, engine driver, and guard have each and all of them many duties to perform and to occupy their minds in connection with the running of the trains. Their forgetfulness in the present case can only be attributed to human fallibility, and not to any intentional negligence of their duty. The Belfast and Northern Counties Railway Company have very nearly completed the second line of rails between Dunadry, Antrim, and Cookstown junction stations. As soon as this second line is opened for passenger traffic an accident such as the one now reported on cannot occur. But I would strongly urge on the Directors of the Company the desirability of working all portions of their single line under the train staff regulations which have for a very long time been recommended by the Board of Trade. The train staff should be used to prevent trains meeting on the single portions of their lines of railway, and it should be supplemented with the block telegraph, to prevent one train overtaking a train in advance.

The accident which forms the subject of this report was caused by the forgetfulness of the station master at Antrim, combined with the forgetfulness of the engine-driver and guard of the passenger train at the same moment and of the same matter. The combined forgetfulness of these men distinctly proves, in my opinion, how uncertain and unsafe the telegraph is for working a single line of railway, unless the regulations are all based on the principle of the necessary presence with each train of some tangible and visible representation which cannot be in two places at the same time. The train staff system is the cheapest and most convenient form in which this principle can be carried out.

It is but fair to say that the system of fixed meeting places, which might be changed by the guards in charge of trains that were more than 20 minutes late, has been in use on the Belfast and Northern Counties Railway ever since the railway has been opened; and this is reported to be the first accident of the kind that has occurred.

The station and signal arrangements at Dunadry, Antrim, and Cookstown junction are to be improved in connection with the second line of rails, which is now almost completed, between those stations.

I have, &c.,

F. H. Rich,
Colonel R.E.

The Secretary,
(Railway Department),
Board of Trade.

APPENDIX.

198.

NORTHERN COUNTIES RAILWAY.

Guard's Telegraph Message to alter Meeting Place.

From _____ *Guard of* _____ *Train,*
To _____
Agent at _____ *Station.*
Send _____ *Train on to*
_____

198.

BELFAST AND NORTHERN COUNTIES RAILWAY.

Guard's Telegraph Message to alter Meeting Place.

From _____ *Guard of* _____ *m. Train,*
To _____ *Agent at* _____ *Station.*
Send _____ *Train on to* _____
_____ *Guard.*

199.

NORTHERN COUNTIES RAILWAY.

Station Agent's Telegraph Message, in reply to Guard's Authority to alter Meeting Place.

I have received Authority
From _____
Agent at _____ *Station,*
To Telegraph as follows to
Guard of _____ *Train,*
The _____ *Train shall*
go on to _____
_____ *Telegraph Clerk.*

199.

BELFAST AND NORTHERN COUNTIES RAILWAY.

Station Agent's Telegraph Message, in reply to Guard's Authority to alter Meeting Place.

From _____
Agent at _____ *Station,*
To _____ *Guard of* _____ *Train,*
The _____ *Train shall go on to*
_____
_____ *Station Agent.*

This Form must in all cases be filled up by Station Agent, and handed to Telegraph Clerk, who will sign for it.

BELFAST AND NORTHERN COUNTIES RAILWAY.

No. 200.

_____ *Station.*

H. M.

_____ M _____ 18

To the Engine Driver of _____ Train.

You are hereby authorised to proceed to _____ Station, to meet _____ Train, instead of at the ordinary meeting place.

_____ *Station Master.*

This order to be forwarded to Locomotive Superintendent's Office, pinned to the Engine Driver's report.

BELFAST AND NORTHERN COUNTIES RAILWAY.

No. 200.

_____ *Station.*

H. M.

_____ M _____ 18

To the Guard of _____ Train.

You are hereby authorised to proceed to _____ Station, to meet _____ Train, instead of at the ordinary meeting place

_____ *Station Master.*

This order to be forwarded to Manager's Office, pinned to Guard's report.

NORTHERN COUNTIES RAILWAY.

200.

_____ *Station.*

H. M.

_____ M. _____

We have received authority,
from Mr. _____
Agent at _____ Station,
to proceed with _____ Train as far as
_____

_____ *Engine Driver.*
_____ *Guard.*

BELFAST AND NORTHERN COUNTIES RAILWAY.

No. 253. General Manager's Office, Belfast, 19th December 1876.

Notice of Extra Goods Train, Belfast to Ballymena and back, on Wednesday, 20th December, and every week day, except Christmas Day, until further notice.

BELFAST TO BALLYMENA.

		a.m.	
Belfast	dep.	8.15	
Carrick Junction	arl.	8.35	
	dep.	8.50	
Ballynure Road	arl.	9.5	
	dep.	9.15	
Dunadry	dep.	9.55	To meet 7.0. a.m. Up at Dunadry.
Antrim	arl.	10.5	To meet 8.35 a.m. Passenger at Antrim.
	dep.	10.20	
Cookstown Junction	arl.	10.30	To shunt to allow 9.45 a.m.
	dep.	11.0	Down to pass.
Ballymena	arl.	11.25	

The intermediate Stations for attaching and detaching Wagons by this Train will be Carrick Junction, Ballynure Road, Antrim, and Cookstown Junction.

BALLYMENA TO BELFAST.

		noon.	
Ballymena	dep.	12.0	
Cookstown Junction		12.25	To meet 9.0 a.m. Goods at Cookstown Junction.
Antrim		12.48	To meet 12.0 Down Passenger at Antrim.
Carrick Junction	arl.	1.35	
	dep.	1.45	
Belfast	arl.	2.5	

This train will have full load from Ballymena, but if there should not be a sufficient number of Wagons, the Guard will arrange to complete load at an intermediate Station, and advise Station Master by wire to have Wagons ready.

Station Masters to inform their Staff and Gangers to inform their Platelayers of the above to insure safety.

EDWARD J. COTTON,
General Manager.

Printed copies of the above report were sent to the Company on the 12th February 1877.

CALEDONIAN RAILWAY.

Board of Trade,
(Railway Department,)
19th January 1877.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 17th instant, the result of my inquiry into the circumstances connected with the collision which occurred on the 2nd ultimo at Southfield junction, on the Lesmahagow branch of the Caledonian Railway.

In this case, the 6.50 a.m. passenger train from Lesmahagow, due at Southfield junction (where it had to join a train from Blackwood to Glasgow), at 7.5 a.m., came into collision with a mineral train from Lesmahagow junction to a colliery beyond Lesmahagow.

Five passengers are returned as having been more or less injured.

The tender buffers of both engines were broken.

At Southfield junction the single line from Lesmahagow joins the double line from Blackwood. The junction is a single one with a cross-over road. At the time of the collision the signal arrangements were undergoing improvements; the old signals which were then in use consisted of home signals at the junction cabin, and distant signals in each direction. Neither was block telegraph working then in force, except to a very slight extent. The mode of working pursued was for the Lesmahagow train to pass through the junction and proceed along the wrong or up line, and then to set back along the line to Blackwood. The train from Blackwood would then set back through the cross-over road and attach the Lesmahagow carriages. Any train arriving on the up line when a down passenger train was due from Lesmahagow would remain a sufficient distance back to give the passenger train room to set back into the Blackwood line. The line rises from Lesmahagow toward and through the junction at 1 in 123.

The evidence is as follows :—

1. *John Campbell,* signalman six years, and five years at Southfield junction: "The old home and "distant signals in each direction were worked at the "time of the collision from the new cabin. The "6.50 a.m. passenger train from Lesmahagow, due at "the junction at 7.5 a.m., arrived at time on the "morning in question. I kept the signals for it at "danger, as it had to run on to the up or wrong line, "but I gave the driver a hand-signal to allow him to "draw forward, previously to setting back on to the "line to Blackwood so as to admit of the train from "Blackwood being attached to it. When the 'train "on line' signal was given me from Littlegill for this "train I was not aware that a mineral train was approaching on the up line from Netherburn, but immediately after I heard the mineral engine whistling. I "did not lower the signals for it. This mineral train "was in the habit of stopping about 100 yards from "the platform end. On the present occasion, when "it drew up, it was about an engine length on the "Lesmahagow side of the end of the up platform. "The passenger engine was reversed as it passed my "cabin, which was unusual. I first gave the driver "a green signal, but changed it to a red light when he "was yet some distance from me on hearing the mineral "driver repeatedly whistle for breaks. I continued "showing the red light until the passenger train had "passed my cabin. I heard the collision occur at "7.5 a.m. I cannot lower the signals for passenger "trains from Lesmahagow without opening the points "of the cross-over road leading to the down line, and "therefore the signals on this occasion were not "lowered. The distant signal from Lesmahagow was "not lit as I did not think it was necessary to do so, "as no train was running during darkness for which "I could lower it. All the other signals were lit. "This same passenger train and mineral train very "often met at this junction."

2. *Andrew Gray,* driver 15 years: "I was in the "habit of driving the passenger train from Lesmahagow for about three months before the accident. "On the morning in question we left Lesmahagow at "time (6.50 a.m.), with engine and tender (tender "first), and seven vehicles, three more than usual. "Our last stop was at Auchenheath station. We "slowed at Littlegill signal-box to exchange the staff. "At Southfield junction the signals were against me, "as they always are for passenger trains from Lesmahagow on account of our running on to the wrong "line. I approached the junction a little quicker than

" usual on account of the heavier load, and as I wanted " to get the train far enough ahead to enable it to be " backed into the Blackwood road. I first got a white " hand-signal from the signalman, then a green one, " and afterwards a red one, the latter when very close " to the cabin. I was in the habit of receiving only a " white signal. In consequence of getting the red " signal, I reversed, put on back steam, applied the " tender break, and dropped sand from the foot-plate. " I had shut off steam before getting the red signal. " After reversing I whistled for the breaks. We were, " however, unable to stop until we came into collision " with the mineral train at a very slow speed. The " only damage done to my engine was the breaking of " the tender buffers, and two of the carriages were " buffer locked. I cannot say whether the mineral train " was in motion or not when I struck it, but it went " back a short distance when the two trains came into " collision. This mineral train was sometimes already " at Southfield when we arrived there with the passen- " ger train in question."

3. *Henry Anderson*, guard two years: " I was guard " of the Lesmahagow train, which consisted of a milk " truck, three horse-boxes, a break-van, a first and a " third-class carriage, seven vehicles in all, in the " order here given, and it had been so run for the " month I had been in charge of it, except that " the three horse-boxes were extra on the present " occasion. I did not notice that the speed on ap- " proaching Southfield was greater than usual. I " first saw a white light exhibited from the cabin and " then a red one, the latter when the driver whistled " for breaks somewhere between the distant-signal " and the cabin. I applied my break at once, and " when we passed the cabin the speed was reduced " to about five miles an hour. On seeing the lights of the mineral train I took hold of the break, " thinking we should come into collision with that " train. I was in the van when we struck. The blow " was not a sharp one. The horse-box next the " break-van and the break-van were buffer-locked.

4. *William Coffield*, driver of the mineral train; driver six years: " I have known the Lesmahagow " line all the time I have been a driver. On the " morning in question I started from Lesmahagow " junction with a regular mineral train for Bankend " beyond Lesmahagow. We last did work at Nether- " burn, and left that station with 27 empty, three " loaded waggons, and a van. I was running tender first, " there being no turntable at Lesmahagow. James " Patrick, breaksman, acting fireman, and William " Prentice, second breaksman, were on the engine with " me. My engine was a four-coupled one, with five- " feet wheels, with a four-wheeled tender. The distant- " signal for Southfield was against me as I approached " it, and I passed it at a speed of four or five miles an " hour, prepared to stop at the end of the platform. " I had been in the habit of stopping at that place " every morning for some time. I stopped there to " give room for the Lesmahagow passenger train to " draw forward so as to get on to the Blackwood " line to make way for us to proceed to Lesmahagow. " I had not any difficulty in bringing my train to a " stand, and had just done so when the passenger " train came up and ran into mine with a hardish " knock. The blow broke two tender buffers and an " intermediate buffer, but no wheels were knocked off " the rails, nor was there any damage done to my " train. I cannot say the speed of the passenger " train. I had reversed and put on steam to set back, " but had not got into backward motion when we " were struck. The distant-signal I passed was not " lighted. I have never seen it lit."

5. *Samuel Ewing*, 14 or 15 months a mineral guard: " I was in charge of the mineral train in question. " We left Lesmahagow junction about 4.55 a.m. Our " last stop was at Netherburn, and we left that " station with a train of 27 empty waggons, three loaded " ones, and a van. I was alone in the van. I had " not worked the train before this morning. On " approaching Southfield junction the driver whistled " twice or thrice for breaks, and I put mine on. The " train was stopped about a minute before the collision. " I felt the blow. I never heard anyone say that the " driver had gone further than usual. No damage " was done to the waggons."

This collision was the result of a faulty mode of working the traffic at Southfield junction, and I think no blame can fairly be thrown upon the servants of the company working either the passenger train or mineral train. These two trains, according to the then mode of working, were allowed to approach each other on the same line of rails on a heavy gradient, neither driver having any defined point at which to stop; consequently any slight error of judgment on the part of either was pretty sure to lead to collision. In the present case, the driver of the passenger train, in consequence of having on a longer train than usual, was approaching the junction (on an ascending gradient), with more than customary speed to enable him to draw his train clear of the points through which he had afterwards to set back. He was, therefore, unable to stop as quickly as he could have done under ordinary circumstances upon seeing the signalman's red hand-signal only exhibited when the latter thought the mineral driver had a difficulty in pulling up. The mineral driver having on a heavy train, with a new breaksman, and having greasy rails to contend with, slightly overran the point at which he was accustomed to stop, and hence the collision.

By the introduction of the block system (now in force) trains from Netherburn and Lesmahagow are not allowed to approach the junction simultaneously; and as soon as an engine turntable, now under construction, at Lesmahagow is completed (so that the Lesmahagow engine may take the train on to Glasgow), the trains from Lesmahagow will run through the junction on to the proper line, and will then set back on that line and attach the Blackwood portion after its arrival. This mode of working will get rid of the anomaly of the junction signals never being lowered for the passenger trains from Lesmahagow.

There was evidently neglect of duty on the part of the signalman at Southfield in not having his distant-signals lit.

There was also irregularity on the part of the guard of the passenger train and the station-master at Lesmahagow in allowing the train to run with the break-van in front, instead of at the rear, of the two passenger carriages.

The home signals at Southfield junction are now separated and placed at the fouling points.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

C. S. Hutchinson,
Major-Gen. R.E.

Printed copies of the above report were sent to the Company on the 12th February 1877.

CALEDONIAN RAILWAY.

Board of Trade,
(Railway Department,)
SIR, *19th January* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 1st instant, the result of my inquiry into the circumstances connected with the slight collision which occurred on the 8th ultimo at Carstairs station, on the Caledonian Railway.

In this case, as the three rear vehicles (consisting of two carriages and a break-van), forming the local portion of the 10.5 a.m. passenger train from Glasgow to the South,—after having been left standing on the main line while the carriages from Edinburgh and Glasgow were being marshalled in proper order for their journey to the South,—were moving by gravity towards the platform to unload their passengers, they were allowed by the guard in the break-van to come into slight collision with the combined train.

One passenger is stated to have been slightly injured.

There was no damage to rolling stock.

The line at Carstairs station falling slightly from north to south, advantage is taken of the fact in marshalling the trains from Edinburgh and Glasgow to the South so that the carriages may be in the proper order for Manchester, and Liverpool, and London; the carriages after having been started, with the aid of a push, continuing to move by the action of gravity at a slow speed easily controlled by the breaks.

The combined train having been thus formed in the present instance, the three last vehicles of the Glasgow portion, which had not to proceed beyond Carstairs, and which had been left standing about 125 yards north of the tail of the combined train, were set in motion by being pushed for about their own length by two porters and Guard Burrows (of three years service); Burrows then jumped into the break-van, intending to stop the three vehicles just short of the tail of the combined train, but states that though he applied the break with all his force, he was unable to get the break-blocks to act properly, and a collision ensued with the combined train at a speed of three or four miles an hour. He also states that he had used the break frequently on the journey from Glasgow to Carstairs, and that though he observed that it did not actually skid the wheels, he thought that it had been in good working order.

From the evidence of a carriage examiner and others it appears that the break in question was undoubtedly working stiffly after it had been applied to a certain extent or nearly to the skidding point. Guard Burrows not having noticed this fact in using the break previously to his arrival at Carstairs was deceived as to his power of controlling the speed of the three vehicles in motion, and hence the collision.

The break-van, after the break-gearing had been examined and oiled at Carstairs, was considered fit for working back with a train to Glasgow, the guard being warned that the break was somewhat stiff to work.

I have, &c.,
C. S. HUTCHINSON,
Major-Genl. R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 12th February 1877.

CALEDONIAN RAILWAY.

Board of Trade,
(Railway Department,)
SIR, *19th January* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 1st instant, the result of my inquiry into the circumstances connected with the collision which took place on the 20th ultimo at Kirriemuir junction, near Forfar, on the Caledonian Railway.

In this case, as the 6.30 p.m. mixed passenger and goods train from Forfar for Kirriemuir, due at the junction at 6.37 p.m., was backing along the down main line at Kirriemuir junction, prior to entering on the Kirriemuir branch, it was run into by the 3 p.m. down goods from Perth to the North, due at the junction at 4.44 p.m.

Three passengers and the driver, fireman, and guard of the mixed train were slightly injured.

In the mixed train the engine had its buffers and buffer beam broken, and one of its cylinders cracked. None of the passenger carriages were injured, but one coal waggon was damaged and its front wheels were thrown off the rails.

In the goods train the buffer beam of the engine was broken and 12 waggons were thrown off the rails and damaged.

At Kirriemuir junction there are no facing-points, but the branch line from Kirriemuir joins the down main line with trailing-points. To enable a train from Forfar to enter the branch there is a cross-over road a short distance south of the junction points, through this the train has to be backed and then to proceed along the down line until the engine is north of the trailing-points, through which it then passes on its way to Kirriemuir. To protect the junction there are no home signals, but only distant signals in each direction. The down distant-signal (to which alone it is here necessary to refer) is 860 yards from the lever frame, placed on the down platform, about opposite the centre of the cross-over road. This distant-signal can be well seen in clear weather.

The points and signals at Kirriemuir junction are not interlocked, nor was the block system in force at the time of the collision.

For 55 chains south of the junction the line rises towards it on a gradient of 1 in 245.

The collision occurred at 6.55 p.m. at a point about 910 yards north of the down distant-signal, and 50 yards north of the lever frame.

The following is the evidence:—

1. *David Bell*, 23 years signalman, all the time at Kirriemuir junction, *i.e.*, since the opening of the line to Kirriemur: "There were never any home signals at "the junction, but only distant signals in three direc- "tions, which signals were some years ago placed at a "greater distance from the junction than their original "position. At the time of the collision there was no "telegraphic communication with Forfar or Glamis, "but block telegraph working was commenced on "Saturday last the 13th instant. At 6.54 p.m. the "train for Kirriemuir arrived from Forfar on the up "line. The down distant-signal lever had been in the "position of danger since 6.14 p.m., when I had put "it into that position after the parliamentary down "train (4.35 p.m. from Perth) was about half-way "between it and the junction. I had lighted this "signal at about 3.30 p.m., but had not been able to "see the back light from then to the time of the colli- "sion, owing to a snowstorm. The Kirriemuir train "crossed at once to the down line, and the first I "knew of the goods train was seeing its head lights

" when about 100 yards off, just as the Kirriemuir " train had got on to the down line. I was running " alongside of the Kirriemuir engine to hold the branch " points, when I saw the goods engine, I roared out " something and turned my hand-lamp red against the " goods driver. I could not tell whether he saw me. " I don't know what the other driver did. The speed " of the goods train was 18 to 20 miles an hour when " it struck the engine of the Kirriemuir train, which " was still in motion northwards. I did not myself go " to look at the distant-signal light after the collision, " and I don't remember seeing the back-light all night " in consequence of the storm. Some two or three hours " after I heard that the distant-signal was properly at " danger. My son, John Bell, who is a labourer at " some neighbouring brickworks, was beside me when " I turned on the down distant-signal after the " passing of the train at 6.14 p.m. He is now sick " and unable to appear." (John Bell had informed both the superintendent and district superintendent that the down distant lever had never been altered from the position of danger after the passing of the 6.14 p.m. train to the time of the collision.) " The " goods train is booked to stop at the junction, but " there was no work for it on this occasion. I heard " no whistle from the goods train, but the wind was " blowing so hard from the north that a whistle " would very likely not have been heard. I never " knew of this distant-signal not having worked pro- " perly before. The signal had been used about half " an hour previously to the passing of the train at " 6.14. It was not freezing hard at this time. I " keep my signals off for advertised trains if nothing " is in the way. There are altogether six levers in " the frame, but only three of these are in use."

2. *John Stewart*, goods driver 11 years: " I started " from Perth at 4 p.m., an hour late, waiting for my " train. We did work at various roadside stations, " and last stopped at Alyth (nine miles from Kirrie- " muir junction), to put off a waggon, and left it with " 21 waggons and a van; our next stop would have " been Forfar, unless we had been stopped at either " Eassie, Glamis, or Kirriemuir junction. We got " clear signals at Eassie and Glamis, but were nearly " stopped at the latter before getting the signal. The " weather was very stormy, with sleet and rain, and " it commenced to snow about Glamis. We were " approaching Kirriemuir junction distant-signal at " 15 to 20 miles an hour, prepared to stop at the " signal had it been on against us. I caught sight of " this signal more than half a mile off, it was showing " clear when I first saw it, and remained so till I " passed it, when I saw that the arm was down nearly " in the post. I had whistled once just after catch- " ing sight of the signal and seeing it clear, and a " second time just on passing it, to inform the signal- " man that I was approaching, the night being coarse " and the wind right ahead. This signal and the up " distant-signal were usually at all right, without be- " ing whistled for, if the road was clear. Finding the " signal off, I continued at the same speed of 15 to 20 " miles an hour, till, when passing the junction station- " house, my mate said there was certainly something " in our way. I at once shut off steam, looked over " on the left side and saw the white head lights of " the Kirriemuir engine on the down line just in front " of me. There was no time to do anything before " we struck it. I think it was in motion northwards. " Its steam must have obscured its light as it was " crossing the road. I saw no red hand-light, nor " heard any shout. We neither of us jumped off. " The blow was severe. I was not knocked down " nor hurt. Twelve waggons were knocked off the " road in my train, but all the wheels of the en- " gine and tender kept the rails. The buffer beam " of my engine was broken, but it was not otherwise " damaged. I did not happen to look back to see if " the distant-signal back light was visible from the " junction, nor did I look at the position of the lever. " I at once ascertained that the down road was pro- " tected by my guard going back."

3. *Samuel Troup*, fireman five years: " When ap- " proaching the Kirriemuir down distant-signal and " about half a mile from it, I saw it showing a clear " white light. The speed at that time was about 18 " miles an hour. There had been no whistle given " before seeing it. This signal was generally off " without being whistled for, unless there was some " reason for its being on. The driver first whistled just " before reaching the distant-signal and again just after " passing it, I suppose to inform the signalman that " we were approaching. I saw the bull's eye of the " signal-lamp just before passing it, and it was then " showing a clear white light. I then looked back to " see that all my train was coming, and the next thing " I saw when passing the station-house was a white " light near the points at the south end of the cross- " ing, which was turned to red as we were passing, " the pointsman at the same time shouting out to " hold on. I cried to the driver at once and made " for my break, but there was no time to do anything " before the collision occurred. I was knocked down " by the coals, and was a little hurt, but had not to " leave my duty. I never saw anything of the head " lights of the Kirriemuir engine, but saw some smoke. " I did not look either at the back light of the distant- " signal or at the levers."

4. *David Walker*, guard about three years: " I " started with the 3 p.m. goods train from Perth for " Aberdeen. We left at 4 p.m., our train not being " ready, and after various stops, including a detention of " 40 minutes at Stanley junction, waiting for passenger " trains to pass, reached Alyth junction at 6.30, and " left at it 6.37 with 17 loaded waggons, four empties, " and the break-van, in which there was beside me a " man in charge of the cattle being conveyed by the " train. We stopped neither at Eassie nor at Glamis. " I heard no whistling before approaching Kirriemuir " junction down distant-signal, but I saw this signal, " showing a distinct white light when close to it. " I did not notice the signal arm. I heard no " whistling after this, and saw and heard nothing " more till the collision occurred, which took me " quite unawares. I was standing up at the time and " was knocked down but not hurt. The man with " me in the van was not hurt; there was another man " in the cattle waggon (10th from the van), and he " was not hurt either. My van stopped just opposite " the lever handles. One waggon next the engine " remained on the rails, and the next 12 were off the " line and damaged. I at once went back to Glamis, " stopping a down train on the way about $1\frac{1}{4}$ miles " south of Kirriemuir junction. On account of the " storm I could not see the back light of the down " distant-signal from the junction; but I did see it " when about half-way between it and the junction, and " it was then showing a white light; about 150 yards " before reaching the signal the speck changed to " half white and half green, and on passing the signal " I saw it was showing a red light to the front, but " I noticed that the arm was a little below the position " of danger."

5. *Andrew Ramsay*, driver 13 years: " I started " from Forfar with the 6.30 p.m. train at about 6.40, " having been detained nine minutes at Guthrie waiting " for the 4.10 p.m. mail train from Aberdeen. I had " on eight vehicles, viz., four coaches and four wag- " gons. I found the up distant-signal off as I ap- " proached Kirriemuir junction. No delay occurred " in crossing the road at the junction. I did not " change my lamps on going through the road and " never have done so, although rule 292 says that " this ought to be done. Owing to the coarseness of " the night I could not see how the lever of the down " distant-signal was standing, nor could I see the " back light of the down distant-signal. It was the " cry of the signalman just as I got on to the down

" road that first attracted my attention; I was going " back at the time and was giving my engine more " steam to try and get out of the way when the goods " engine ran in; it was a sharpish blow. It nearly " knocked me down. I was hurt in the head and " was 14 days off duty. I did not see the levers " till some time after the collision. I had no means " of knowing that I was protected in crossing the " road although rule 251 says that I ought to see to " this."

6. *George Bowman*, three years fireman: " The " lamps are never changed in crossing the road at " Kirriemuir junction though rule 292 says they " should be. We first saw the goods train after hear- " ing Bell shout, and then it was close on us. Ram- " say gave the engine steam to try and get back. I " was knocked back against the front of the fire-box " and had two ribs broken. I was three weeks away " sick."

7. *Robert Taylor*, guard two years: "I started " from Guthrie at 6.13 p.m., nine minutes late, waiting " for the 4.10 p.m. mail from Aberdeen to pass. We " lost another minute at Forfar attaching four wag- " gons and left it at 6.40 with a train consisting of " engine, tender, four waggons, one break-carriage, one " composite, one third-class, one break-van, in which " I was alone. We reached Kirriemuir junction all " right and I remained in the van while we were " crossing. The collision took me quite unawares " while we were still moving northward. I was " knocked from one end of the van to the other and " was hurt in the head. I was off duty 10 days. No " passenger carriages were injured, but one waggon of " coal was damaged, the front wheels being off the " rails. I did not see the signal levers as I went back " at once to Forfar to protect the up road which was " obstructed. The collision occurred at 6.55."

The weight of the evidence in this case goes to prove that the collision was caused by the down distant-signal at Kirriemuir junction not showing danger to the driver of the goods train when he passed it during a snowstorm on the evening of the 20th ultimo. He had consequently no warning of the Kirriemuir passenger train being in his way till he was so close upon it that there was no time for him to take any steps to diminish his speed, of some 20 miles an hour, before the engines of the two trains came into collision, the consequences of which, from the fact of the Kirriemuir train having been in slow motion northward, were happily less serious than might have been expected.

The absence of interlocking apparatus renders it impossible to say positively whether or not the lever of the down distant-signal was in the position of danger as affirmed by the signalman and his son; it is quite possible that the signalman may have accidentally used the wrong lever when (as he says) he put the signal to danger after the passing of the down train at 6.14 p.m., or he may have altogether omitted to restore the lever to the position of danger after the passing of this train; or he may have moved the lever and the signal may not have responded to the motion. Against this latter theory is the evidence of the goods guard, who distinctly declares that the signal changed from all right to (nearly) danger as he was approaching it on his way back to protect his train directly after the collision. If this evidence is trustworthy it shows that some one must have moved the lever after the collision.

This signal was not in the habit of sticking and the amount of snow that had fallen before the collision seems hardly sufficient to account for its having failed to work properly.

The driver of the mixed train is to blame in not having changed the head lights of the engine from white to red when he crossed from the up to the down line at the junction; these lights are purposely placed upon the canopy of the engine just over the foot-plate so that there may be no excuse for not changing them whenever necessary according to rule 292. Had they been so changed on the present occasion it is quite possible that the goods driver might have become earlier aware of his danger.

I am informed that Kirriemuir junction is one of a very few on the Caledonian Railway which have not yet been provided with interlocking apparatus and modern arrangements. The sooner this and the other junctions are so provided the better. It is a dangerous thing to be dependent for the safety of a junction only on distant signals and those not interlocked.

It is satisfactory to know that the block system was put in force on this portion of the Caledonian Railway on the 13th instant. This, at any rate, will be a great safeguard against the recurrence of such a collision as the present, as now when a train is crossing from the up to the down line at Kirriemuir junction no down train is allowed to leave Glamis.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Major-Gen. R.E.

Printed copies of the above report were sent to the Company on the 12th February 1877.

CAMBRIAN RAILWAY.

Board of Trade,
(Railway Department),
Downing Street, 18th December 1876.

Sir,

In compliance with the instructions contained in the Order of the 15th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 12th instant, at Towyn station on the Cambrian Railway.

The engine of a passenger-train from Machynlleth to Pwllheli, left the rails as it was passing through a pair of facing points at the south end of Towyn station.

No persons were hurt.

Towyn station is protected with the ordinary home and distant signals. The facing points where the accident happened are interlocked with the down distant-signal by means of a wire and a bolt. These points are about 393 yards from the place at the north end of the platform where the levers are placed, which work the signals and the bolt-lock that secures the facing points. The points themselves are worked by a ground-lever close to the points. They are weighted to lie in the proper position for down trains.

The Cambrian Railway is a single line. There is a loop line at Towyn station for trains to pass each other, and the points where the accident happened are situated at the south end of this loop line. The down distant-signal cannot be lowered for an approaching train unless the points are in their proper position for a down train, as the bolt by which the points are secured, prevents the wire and the bolt from being pulled in, and the signal from being lowered, unless the points are in the proper position, in which case the bolt is pulled through the locking-bar of the points, and then the lowering of the signal secures the points.

On the day in question a passenger-train, which consisted of an engine and tender, three passenger coaches, and a break-van, with the guard in charge at the tail of the train, approached Towyn station about

9.26 a.m. The distant-signal was at "*danger*" against the driver, who stated that he slackened the speed of his train so as to stop at the distant-signal. But as he reached that signal he observed that the line in front of him was clear right up to the station platform, so he drew his train on towards the station. When his engine got close to the facing-points at the south end of the loop, he noticed that they were partly open, and he immediately did his best to stop the train. The off leading and driving wheels of the engine, in passing through the off side facing-point, got at the wrong side of the point rail, ran for about eight yards along the chairs, then both the leading and the driving wheels of the engine got on to the ballast, and after running for 27 yards on the sleepers and ballast the engine and train came to a stand.

It appears that the shaking of the points by the leading and driving wheels as they passed, caused the points to be pulled, by the weight attached to them, into their proper position, and consequently the trailing wheels of the engine got on their proper road, and did not leave the rails. The tender and all the coaches of the train also ran along the down line of rails.

The accident was caused by the neglect of the engine-driver of the passenger train in not paying attention to the distant-signal, which was at "*danger*" against him.

The arrangement of the signals and points at Towyn station had nothing to do with causing the present accident, as the locking arrangements answered perfectly, and would not allow the signalman to pull off the signal while the points were wrong, although he tried to do so, not knowing that the points were half open, nevertheless I would recommend that the Towyn station yard should be re-arranged, that two of the sets of facing-points and one distant-signal at the south end of the station should be done away with, and that the home or station signals should be separated, one being placed at the south end of the station, outside the facing-points, and the other at the north end of the station outside the facing-points at that end of the station-yard.

It would be further desirable that these facing points at the north and south end of the station should be brought within 300 yards of each other, should be worked by the signalman from his station by means of rods, should be interlocked with the signals, and secured by means of locking-bolts in their proper position, and by locking bars to prevent their being moved when trains are passing over them.

I have, &c.,
F. H. Rich,
Colonel, R.E.

The Assistant Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 8th January 1877.

GLASGOW AND PAISLEY JOINT RAILWAY.

Board of Trade,
(*Railway Department,*)
5 January 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 2nd instant, the result of my inquiry into the circumstances connected with the collision which occured on the 28th ultimo, at Pollok junction, on the Glasgow and Paisley Joint Railway, between a passenger train belonging to the Glasgow and South-western Railway Company and a waggon forming part of a goods train belonging to the same company.

In this case, as the 5.15 p.m. up passenger train from St. Enoch's station, Glasgow, for Carlisle, was passing Pollok junction it came into collision with a waggon forming a portion of the 5 p.m. College pilot goods train from Pollok junction to College station, which waggon was thrown foul of the up line just before the passenger train reached the spot.

No personal injuries were sustained.

In the passenger train the steps of the engine, and the sides of two horse-boxes, a van and carriage in front of the passenger train were injured.

In the goods train one waggon was damaged and three others were off the rails.

The Pollok junction signal-cabin is on up side of the line about 200 yards from the up end of Shields Road station platform; a siding joins the down line with trailing points just opposite the cabin, and another parallel siding likewise on the down side of the line also terminates nearly opposite to the cabin. It was out of the former siding that the College pilot engine had pulled 17 waggons, and in pushing them back along the main down line the last of these left the rails at a point about 17 yards on the Glasgow side of the cabin. This waggon then came in contact with a waggon standing in the parallel siding, and the collision caused the last waggon but one to be thrown into the 6-ft. space, foul of the up line.

The evidence is as follows :—

1. *David Ralston*, signalman in the Joint Line Service about three years, 12 months at Pollok junction : "I came on duty at 2 p.m. on the 28th for eight hours. "At 5.25 p.m. I took 'on line' the 5.15 p.m. train "from Shields Road, and on its being ready to start "I lowered my home-signal for it. The train came "on and the engine was about three or four yards "from the cabin, when I saw that a waggon was "foul of the up road just under the cabin; there was "no time for me to do anything, and the engine "and some of the vehicles grazed the waggon. The "passenger train stopped with the first carriage (a "third class) opposite the cabin. The waggon that "was struck was one of ironstone, one of 17 "in the act of being backed against a van which "was standing on the down main line. The engine "and van had come to a stand at my junction, at "5.18 on the up road, and as soon as I was able I "allowed them to cross and the engine to leave "its van on the down road and to go into a "siding to bring out the waggons. It then brought "the waggons out on to the main line, I closed the "siding points and waved the driver back with a "hand-signal, having given the passenger train the "signal as the waggons were drawing out. After "giving the engine with the waggons the signal to "set back, I gave the passenger train on to Shields "junction No. 1, and then on looking out of the "window I saw the waggons in the act of fouling "the up road. I did not see any others off the road. "This was about 5.25 p.m. Had I been allowing a "crossing on the main line I should not have ac-"cepted a train either from Pollok Shields, or Shields "junction."

2. *William Montgomery*, goods driver with the Glasgow and South-western Company $1\frac{3}{4}$ years : "I "had come from Eglinton Street yard with two vans "to take some waggons to College. After arriving at "Pollok junction I had to wait a few minutes before "I could get to work. I then left the vans on the "main up line and went into the siding and drew "out 17 waggons of ironstone. They were all "ready and I drew them out at once, and set back "immediately by signal from the pointsman. I at "once felt the train hard to push and got a signal "from the first guard, who was standing near the "last of the waggons, to stop. I did not go back

" more than two or three waggon-lengths. I then " went back to see what had happened and found three " of the coal waggons off the road ; the last was off on " the outside, the last but one on the inside, and the " last but two, with one pair of wheels off ; all the " couplings had held good. I could not make out " what had caused the waggons to leave the road. " I had not set back at all sharp."

3. *John Landsborough*, goods guard about 1½ years with the Glasgow and South-western Railway : " I " came with an engine and two break-vans from " Eglinton yard to take waggons from Pollok junction " to College. I left both vans on the main up line, " and then examined the waggons in the siding and " found there were 17 to take out, and I saw nothing " wrong about them. Either I or my mate hooked " them on to the engine which then drew them out. " I was standing a little on the Shields junction side " of the signal-cabin as they came back, and I saw " the last waggon leave the rails and run into a " waggon standing in a siding next to the down line ; " I then saw the next but one come into the " 6-ft. space and foul the up line just as the pas- " senger train was coming up. The third waggon " also left the rails. On seeing what was occurring " I showed a red light to both drivers ; my driver " seemed to stop at once ; I thought the last waggon " must have got off the road by striking a fixed " crossing point opposite the cabin. (This was not " the case.) I did not see the mark on the outside of " one of the chairs on the Glasgow side of this point. " The three last waggons, and all the rest, belonged to " the Calder Iron Company ; they had all square buffers, " they all had springs ; (length over all was 14 feet, 5 feet " 9 inch wheel base). I did not examine the buffers " after the accident. My mate was standing at the " break-vans ready to hook on when the accident " occurred."

4. *William Campbell*, foreman platelayer : " I was " up at the spot about half an hour after the collision. " The waggons had not then been moved. The last " waggon was off the rails outside and lying against a " waggon in an adjoining siding, coupled to the one " next to it. I thought these two had been buffer " locked. There was a mark on one of the chair keys " outside which showed me where the wheels had " first gone off, and I saw a mark along the 4-ft. space " from this point to where the waggons stopped. I " saw no marks on the fixed point of the crossing, " and this was on the Paisley side of where the " waggon got off. Next day the waggon inspector " told me I could load the last waggon as it was fit " to run."

5. *John Emerson*, driver, 15 years with the Glasgow and South-western Railway : " I was in charge of the " 5.15 p.m. train from St. Enoch to Carlisle. I started " about two minutes late, with a train consisting of " engine and tender, two horse-boxes, and 12 vehicles, " including three vans and two guards. I first " stopped at Shields Road and left it at about 5.21 or " 5.22, with the starting-signal lowered, and had got " as far as the signal-cabin (about 150 yards), when " a waggon which was being pushed with others " along the down line left the rails and got foul of " the up line before I noticed it. I felt it graze " against the buffer plank end of the engine and at " once applied the air break (attached only to the " engine), and pulled up sharp in about four carriage " lengths. My speed at the time was about 10 miles " an hour, the signals ahead being red. One step " on the engine was stripped and one bent. I started " again in about 40 minutes."

The fireman agrees with the driver's evidence.

The superintendent of the Glasgow and South-western Railway informed me that about four days before the collision two of the same class of waggons had become buffer locked at Shields junction, and that the owners of the waggons had been communicated with about their general condition, their wheels having too much play and the wheel base being too short.

In this case there appears to be no blame attaching to any of the servants of the company ; the driver of the passenger train could hardly have stopped more promptly than he did upon seeing the waggon coming foul of the road on which he was running. The goods driver also stopped as soon as he was aware of anything being wrong. The signalman had no time to do anything as the engine of the passenger train was close to his cabin when the waggons left the rails.

The reason of the last waggon leaving the rails (which there is little doubt but that it did, 17 yards on the Glasgow side of the cabin, where a wheel mark was very distinct on the outside of a chair, and thence, according to the evidence of the foreman platelayer, along the 4-ft. space,) was most likely from inequality in the buffers of it, and of the waggon next it ; this inequality, on the engine beginning to push them back, may have caused it to receive an oblique thrust and thus be pushed off the rails. I did not see these two waggons, but on looking at others of the same description belonging also to the Calder Iron Company I observed great inequality in both the height and breadth of the square buffer ends. It appears that the Glasgow and South-western Company are alive to the defects of these waggons and their proper course is to refuse to receive them if they consider them dangerous to run.

In a short time arrangements now in progress will be completed by which the shunting operations at Pollok junction will be more or less removed from the main line.

I have, &c.,
C. S. Hutchinson,
Major-General R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Glasgow and Paisley Joint, and the Glasgow and South-Western, Railway Companies on the 6th February 1877.

GLASGOW AND SOUTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
5th January 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 14th ultimo, the result of my inquiry into the collision which occurred on the 8th ultimo at Ayr station, on the Glasgow and South-western Railway, between a runaway engine and a train of empty carriages.

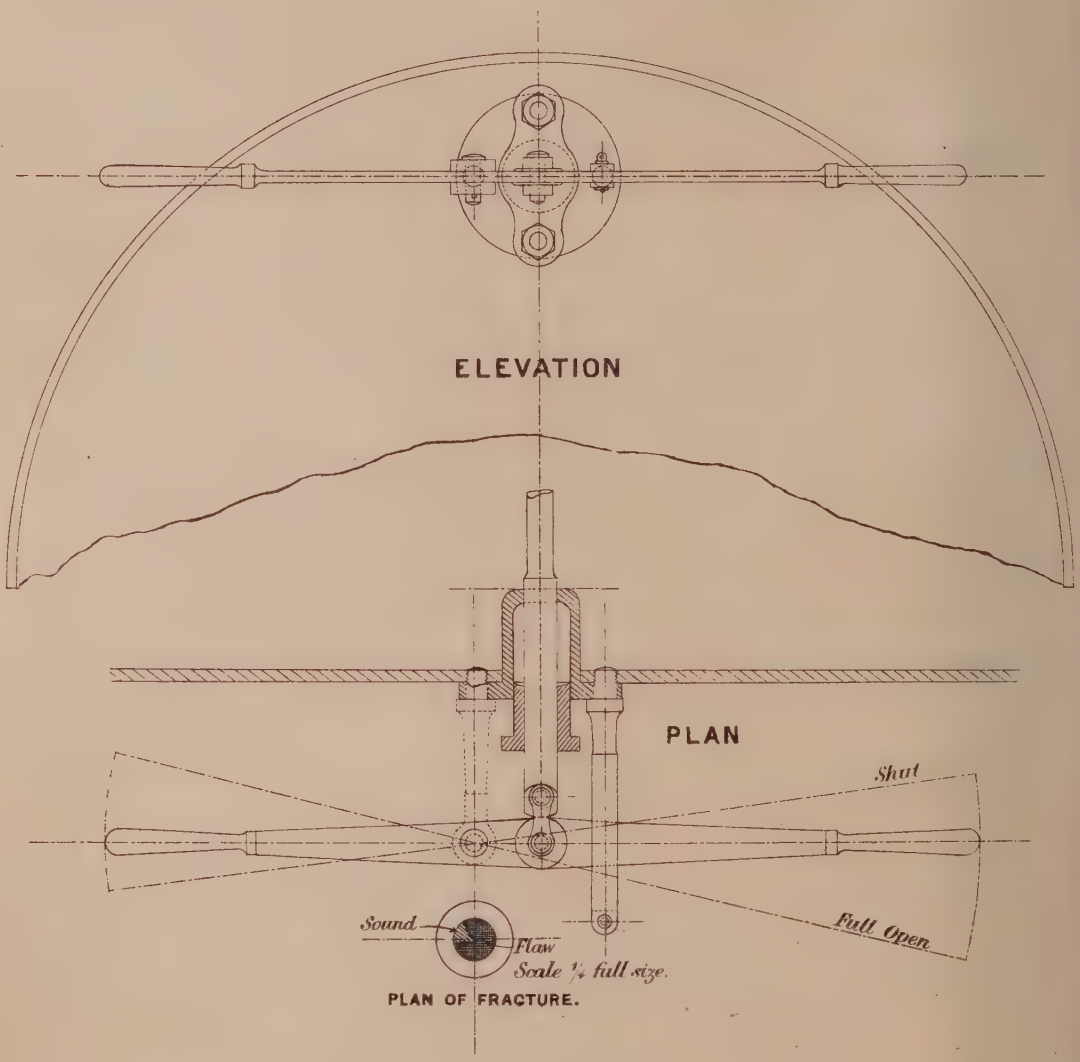
No personal injuries were sustained.

In this case, while a light engine was standing at the Hawkhill coaling stage, about a mile from Ayr station, in charge of two men engaged in coaling it (the driver and fireman being away at their dinners), the fulcrum stud of the regulating lever broke off as one of the coalmen was in the act of applying steam to move the engine a few feet backward after coaling it. The valve consequently flew completely open, and after some ineffectual attempts to close it, the men

To accompany Major General Hutchinson's report dated 5th January 1877.

FRONT OF FIRE BOX OF ENGINE Nº 171,

SHEWING REGULATOR HANDLE &c.



Scale ⅛ full size.

Dangerfield, Lith. 22 Bedford St Covent Gn

became frightened, and jumped off, about half-way between the coaling stage and the points connecting the coal siding with the main line to Ayr at Hawkhill junction, leaving the regulator fully open, and the reversing lever in full backward gear. The Hawkhill junction signalman (stationed about 100 yards from the coal stage) saw the engine coming, and could, had he realized the position of matters, have kept the siding safety-points closed against the main line, and have thrown the engine into the dead end and off the line; but not seeing until too late that there was no one on the engine, he, with the object of preventing the engine leaving the rails (the main line being clear), and thinking the driver wanted to shift his engine into another siding, closed the safety-points, and thus allowed the engine to enter upon the main line to Ayr, along which a passenger train had passed about five minutes previously. This train had happily unloaded its passengers at Ayr station before the light engine dashed into it at a very high rate of speed. Its engine was just returning to it after having taken water, and the force of the collision crumpled up the carriages between the two engines, knocking three carriages on to the platform, and through the roof of the verandah of the station. The break-van and these carriages were more or less destroyed.

The evidence is as follows:

1. *William Ledingham*, porter at Ayr station: "I was "on duty on the 8th December, and was standing on "the up platform at about 2.35 p.m. A train of "empty carriages which had arrived at 2.32 from "Mauchline, consisting of a break-van, a composite, "and two third-class carriages, was standing on the "up line, having just finished unloading; the engine "had left it, but was returning after having taken "water. My attention was directed to an engine "approaching on the up line, running pretty hard. "Seeing it coming on I shouted out to the driver of "the engine of the empty train that an engine was "coming, but he had not time to turn back before the "other engine ran into the empty train. The van was "smashed to pieces, and the other three carriages "knocked on to the platform and through the veran-"dah, first striking the tender of the engine and "knocking a hole in it. No one was hurt. When "the runaway engine was within about 100 yards of "the platform I saw that no one was on it."

2. *David Coutts*: "I was coalman at Hawkhill "coaling stage on the 8th December. Engine 171 "was standing at the coaling stage when I came back "from dinner, at about 2 o'clock. Steam was off, and "the reversing lever I believe was in mid gear. I "shifted the engine forward 3 or 4 feet to get the "tender opposite to the coal waggon without any "difficulty. I then coaled the engine with the assist-"ance of some other men. After this I went to set "the engine back about 10 or 12 feet towards Ayr "to enable me to clear the weighing machine on "the adjoining line of some loose coal. I opened "the regulator a small bit to let the engine back, "but I do not remember having altered the re-"versing lever, though I must have done so. As "soon as I had set back, in shutting the regulator "again, the left-hand stud broke, and the right end of "the regulator handle catching against the front of "the fire-box caused the regulator to open full out. I "tried to push the regulator back with both hands, "but could not succeed in doing so, and seeing that I "could not shut steam off I jumped off about half-"way between the stage and the points, one of the "other men who had remained on the engine jumping "first. It never struck me to apply the break, which "was on when we began coaling. I had taken it off "to shift the engine, thinking it was useless to do it "with steam on. I did not attempt to reverse the "engine. I saw the other man with his hand on the "reversing lever after passing through the points. "The engine began to go very fast after I had left it. "I followed it up to Ayr and found the collision had "occurred."

3. *George McLeod*: "I was a coalman at Hawkhill "coaling stage on the 8th December. I had nothing "to do with moving the engine. After the stud "broke, Coutts tried three or four times to push back "the regulator. I got frightened, and did not think "of applying the break or reversing the engine. I "jumped off after Coutts."

4. *John Miller*, signalman 15 months at Hawkhill junction; "I was alone in the cabin at about 2.35 p.m. "on the 8th December. I was expecting an engine "from Falkland junction, and was looking out for it, "when I saw an engine coming from the coal stage with-"out whistling. I thought the driver was wrong, but "to save the road and the engine, I opened the safety-"points and allowed it to come on to the main line. "When it was nearly opposite the cabin I saw that "there was no one on it. I could do nothing more, "as I could not telegraph to Ayr. I heard the crash "of the collision about 1½ minutes after the engine "passed me. The distance is about a mile. The "engine was not going very fast when I lost sight of "it. The safety-points sometimes lie right for "coming out if there is nothing passing on the main "line. There is a rule that engines should not come "out at the Hawkhill end of the coal siding, but at "the Mauchline end."

This collision, which was happily unattended by any personal injuries, was the result of the fracture of the left-hand fulcrum stud of the regulator handle of engine No. 171, when in the hands (at the Hawkhill junction coaling stage) of a coalman unskilled in the mechanism of engines. The stud (see sketch) was a steel bolt one inch in diameter at the point of fracture, where it was screwed into the front plate of the fire-box. The fracture was the result of a flaw extending over $\frac{4}{5}$ the area of the cross section of the bolt, and is stated to have been quite imperceptible when the engine received a general overhauling (in which the stud had been taken out and replaced), a short time before the collision. It will be seen by the sketch that the flaw could not have been seen by the driver.

The fracture of the stud need not have resulted in serious consequences had the coalmen on the engine possessed only a very moderate amount of knowledge in the working of engines. By dropping a pin into the right-hand stud a new fulcrum might have been obtained by which to shut the regulator, or the break might have been applied, or the reversing lever have been put into mid gear.

This collision indicates the necessity of having at a coaling stage, where engines are constantly standing while the drivers and firemen are permitted to be absent, a man in charge who understands the working of engines.

Though the Hawkhill junction signalman acted as he thought for the best in allowing the engine to leave the siding, he ought, in accordance with his instructions, not to have done so, and the collision would then have been avoided.

I have, &c.,

C. S. Hutchinson,
Major-Genl. R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 6th February 1877.

GREAT-NORTHERN RAILWAY.

Arlesey-Siding,
Friday evening,
5th January 1877.

SIR,

I HAVE now the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the afternoon of Saturday the 23rd ultimo, at the Arlesey-Siding station on the Great-Northern Railway.

On that afternoon, the 2.45 p.m. express-passenger-train from the King's-Cross station, London, for Manchester and Liverpool, was, to meet the exigencies of Christmas traffic, divided into two parts; and the first part left King's-Cross at 2.47 p.m., consisting of an engine and tender, 13 passenger-carriages, and two break-vans. It lost a little time on the first part, but ran at very high speed on falling gradients during the latter part of its journey. After passing Hitchin, the engine-driver found the signals all clear until he approached the Arlesey-Siding station, where the distant and home signals were both at danger. His train was unusually heavy, the rails were in very bad condition, and he not only failed to stop at the home-signal of the station, but his engine came, 283 yards beyond that home-signal, into violent collision with six waggons of a goods-train, three of which had, in shunting, been thrown off the rails, and which obstructed the down-main-line on which he was travelling. This engine-driver and his fireman, who were both killed in jumping or dropping from the engine shortly before the collision, would probably have escaped with little or no injury if they had remained on the engine, which came to a stand on its wheels, after passing through or over the obstructing waggons, about 13 yards in advance of its tender. The guard in the leading van, though knocked down and stunned, was not seriously injured, and his van stood over the bogie-truck which had been knocked from under the leading end of the engine. Four passenger-carriages behind this van stood in the ballast at various angles to one another, and more or less damaged. The next four passenger-carriages had mounted one another, and were piled up in a confused mass, and the remaining vehicles stood behind them, six of them not having left the rails.

Three of the passengers were unfortunately killed, and 30* others have up to the present time complained of injury.

The Arlesey-Siding station is $5\frac{5}{8}$ miles north of Hitchin, and $2\frac{1}{4}$ miles north of the Cadwell block-cabin. It is approached on a straight line, and on falling gradients from Hitchin of 1 in 200 for $1\frac{1}{2}$ miles, then 1 in 264 for two miles, and finally 1 in 440 from the distant-signal to and through the station. The point of collision was 106 yards on the north of the signal-cabin, whilst the home-signal is 177 yards, and the distant-signal 792 yards on the south of that cabin. I enclose a diagram which Mr. Johnson, the engineer-in-chief of the Great-Northern Company, has been so good as to furnish, and which will be found, with the following evidence, to furnish all necessary details.

Evidence.

William Thacker said: "I am a guard in the "service of the Great-Northern Railway Company, "and have been so for the past five years. I left "King's-Cross perhaps two or three minutes late, "2.47 or 2.48, on the afternoon of the 23rd December. The rails were very slippery. We ran "through Hitchin at the usual speed. I had a great "quantity of luggage and parcels, and I began to sort "them after leaving Hitchin. I was riding in the "front van next behind the tender. I did not look "out for signals. I heard the engine-driver whistling "for the breaks whilst engaged sorting luggage and "parcels. I jumped up and applied my break, and "had time to get it tight on. The train was running "very fast when I did so. I cannot speak exactly, "but think it would have been half-way between the "distant-signal and the station when I took my eyes "off my break and began to look up for signals. I "saw the 'home'-signal of the Arlesey-Siding signal "cabin at danger (both the arm and the light), and "I also saw the advanced-signal from that station at "danger. I did not see the distant-signal, as I had "passed it before I looked out of my van. I was "still at my break when the collision occurred, and "I held to the wheel by way of saving myself. I "was slightly hurt in the back and face, but not "sufficient to make me leave work. My train struck "the goods-trucks very hard. I cannot give an idea "of the speed when the collision occurred. The "steam was blowing down upon my van, and I could "see nothing of the driver and fireman. The engine-"driver asked for the breaks with his whistle long "before the train could have reached the distant-"signal, but I did not notice where the steam was "shut off. I noticed after the engine stopped that "the reversing-lever was right over towards the front "(in forward gear). I went particularly to look at "it when the engine stopped, and noticed that it was "in that position. The tender-break was tight on. "I was knocked down amongst the luggage, and got "through the window. As we ran between Hitchin "and the point of collision the weather was clear, but "a little snow was beginning to fall. The signals "were clearly visible. It was getting dusk, but we "could see the arms as well as the lamps upon the "posts for the ordinary distance as well as on any "other day. I had a six-wheel van, with an ordinary "wheel in it, a hand-break. Some of the wheels "were skidded and some not, but I cannot say which. "The break was in good order. It was one of the "heavy express-vans. I heard some one call out as "we passed the cabin either 'look out' or 'jump "out,' but I remained at my wheel.

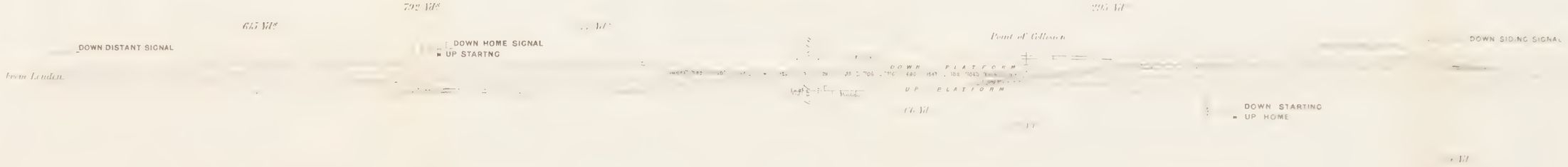
William Graves, signalman for over eight years in the service of the Great-Northern Railway Company, said: "I have been signalman at Arlesey-Siding station "all that time. I have been in the present cabin for "two years last May. It was then a new cabin. "The station was re-signalled two years last May, "the signals having been spread, and the points and "signals interlocked at that time. In my record-"book (book produced) 3.18 is the time shown at "which I received notice of the 2.45 p.m. express-"passenger-train from London, first part, passing "Hatfield at 3.16. Such trains are always tele-"graphed to me from Hatfield. It was telegraphed "specially as 'first part,' spelled on the instrument. "In my second book (book produced) 3.34 is the "time shown at which I received the 'Be ready'-"signal from Cadwell signal-cabin to indicate to me "that the train had at that time left the Cambridge "junction, north end of Hitchin-Yard. At 3.35 I "received 'train-on-line' from the Cadwell cabin, to "indicate that the train had passed the Cadwell cabin "at that time. At 3.37 the train passed my cabin. "The 3.3 entered under the 'line-clear' column "given to station in rear was entered in a mistake. "I entered those figures when I was going to enter "3.37 in the ordinary column. I could see the train "approaching for about a mile and a half. It was "sufficiently light to enable me to do so. The engine-"driver did not appear to me to have shut off steam "until he prepared to jump in passing the 'home'-"signal. I saw the fireman jump off on the left-"hand side of the engine, just inside the 'home'-

* One of whom has since died, and 86 others have since complained of injury.

GREAT NORTHERN RAILWAY.

PLAN OF ARLESEY SIDING STATION.

Showing positions of Trains at the moment
of the Collision on the 23rd December 1876.



SCALE, 100 FEET TO AN INCH

" signal, 40 or 50 yards. I did not see the engine-
" driver jump; but there was no one on the engine
" as it passed me. I did not see anything of the
" engine-driver after the fireman jumped off the
" engine. I did not notice the engine-driver on the
" engine at all. The breaks did not seem to be on, as
" I did not hear any noise or see any fire or smoke.
" I did not leave my box or make any examination
" of the train after the collision. The last time I had
" given 'line-clear' to the Cadwell cabin (two and a
" quarter miles south of my box) was at 2.41. There
" had been no obstruction on the line from 2.41 to
" 3.30, and the Cadwell signalman was therefore at
" liberty to send forward any train that might arrive.
" The up goods-train left Langford at 3.16 p.m. I
" received the 'Be ready'-signal for it at that time
" from Arlesey station-cabin, about a mile and a half
" north of my box. That train was telegraphed to me
" as leaving Arlesey station at 3.25 p.m. It arrived
" at the Arlesey-Siding station at 3.30. I gave 'line-
" clear' back for it to Arlesey station at 3.31. I
" pulled over the points of the cross-over-road to
" enable this goods-train to shunt from the up across
" the down main-line to the down-siding beyond it.
" As soon as it arrived at 3.30, and before I gave
" 'line-clear' to Arlesey station at 3.31, I also
" motioned the driver to back the train across the
" down road before giving 'line-clear' at 3.31. I do
" not remember doing anything else before the train
" backed. I had placed my down-signal at 'danger,'
" when the last down train had passed at 2.40. My
" distant and home down-signals had remained at
" danger from 2.40 to the time of the collision. I
" usually keep them at danger on account of the
" gates at the level-crossing. I would not have been
" able to move the points to allow a goods-train to
" cross unless the signals had been at danger. The
" engine of the goods-train came to a stand in the
" first instance several yards on the south of my
" signal-cabin. In shunting back the engine came
" to a stand at the south of the crossing through-road
" points. When I saw the engine-driver stop I
" shouted to ask him why he did not set back, as the
" express would leave Hitchin. I also asked the
" guards and others why the train did not set back.
" Mr. Walters, the station-master, told me some
" waggons were off the road. That was about 3.35.
" I turned round to the bell for the purpose of
" blocking the road, when the Cadwell signalman gave
" me 'train-on-line,' I having previously received the
" 'Be ready'-signal. I did not then make any further
" attempt to block the road to Cadwell, because I had
" already got 'train-on-line' from Cadwell, and I
" knew that the train would have passed the Cadwell
" cabin. I took a flag and threw it out of the window
" to a porter, and told him to go back as far as he
" could to stop the train. I could see the train coming
" just after the porter left me. It would then be about
" a mile and a half from me. I could at that time
" see quite plainly that the arm of my distant-signal
" stood at 'danger.' It was in a perfectly horizontal
" position. I could not see the light burning because
" there was too much daylight. I did not hear any
" whistle from the passenger-train. I am quite
" certain that my home and distant signals showed
" perfect danger-signals as the engine-driver of
" the passenger-train approached them. The train
" appeared to pass me at about the usual speed of
" a fast passenger-train. It appeared to me as if it
" had not been stopped at all. The trains generally
" take three to four minutes to run from Hitchin to
" my cabin, and two minutes from the Cadwell cabin
" to my cabin. I think that the train took about the
" average time on this occasion it usually does in
" running from Hitchin to my cabin, as far as the
" message transmitted to me indicated. That is all I
" can go by. I exercise my own judgment in regard
" to allowing one train to cross the main line when
" another is due. I go by the average running of the
" train. When the up goods-train arrived I allowed
" it to cross because I thought it would be clear in the
" siding one minute before the down passenger-train
" would reach Hitchin. It is not my custom to block
" back to Cadwell cabin before commencing such an
" operation unless in the case of fog or of snowstorms,
" when the signals cannot be plainly seen. It was
" the accident of the three waggons, as I understand,
" leaving the rails, which caused the line to be blocked
" for a longer time than I expected, and I only knew
" of this when it was too late to enable me to block
" back. I had received a copy of the working time
" table for the week ending Saturday, December 23rd.
" I knew by that time table that the 2.45 p.m. passen-
" ger-train from King's-Cross would be divided, the
" first part for Manchester and Nottingham to leave
" King's-Cross at 2.45 p.m., the second part for the
" loop line and Hatfield, to be despatched at 2.50 p.m.
" In practice I always, after giving 'line-clear,' allow
" shunting at the through-road in question, without
" blocking back to Cadwell. I calculate by allowing
" 21 or 22 minutes for a fast train to run from Hat-
" field to my cabin, and I know that a train may be
" expected four minutes after leaving Hitchin. I
" would not allow anything to cross the down line, for
" fear of delay, if a fast train has left Hatfield within
" 17 minutes, and not at all if it has already left
" Hitchin. My down 'home'-signal is 155 yards
" south of the through-road, and I allow shunting at
" the through-road because it is inside and protected
" by the 'home' and 'distant' signals. The board of
" regulations for 'train signalling by block' is hang-
" ing up in my cabin, rule number 5 of which is
" applicable in this particular case. It runs as follows:
" 'Trains are to be considered out, and the signal
" "line-clear" must be given to the station in the rear
" 'immediately the last vehicle has passed the station
" "home" signal-post, except as provided for in clauses
" '6 and 7.' "

" 'Clause 6. Where the line is on a falling gradient
" 'the "line-clear" signal must not, in the case of a
" 'train or engine that has stopped, be given to the
" 'station in the rear until such train or engine is
" 'again in motion, and proceeding on its journey.' "

" 'Clause 7. During foggy or snowy weather the
" 'signal "line-clear" must not be sent to the station
" 'in the rear until the train or engine that has stopped
" 'at the station has passed the home-signal, and is
" 'proceeding on its journey, or has been shunted into
" 'a siding clear of the main line.' "

"The latter part of paragraph 4 also applies, 'nor
" 'must the line be obstructed after the signal "train-
" 'on-line" has been received.' "

Philip Walters, station-master at Arlesey-Siding station, says: "I have been station-master at Arlesey-
" Siding station for nearly 15 years. I saw the up
" goods-train arrive about 3.30 p.m on December
" 23rd, I do not know the exact time. I was near
" the signal-cabin and saw the guard motion with his
" hand to the signalman that he wanted to cross into
" the down-sidings. I cannot say that I saw the
" signalman give him leave to do so. I saw the train
" setting back immediately afterwards, and then it came
" to a stand with the engine a little to the north of
" me, about 30 yards. I went forward to ascertain why
" the train had come to a stand. The driver shouted
" to me 'waggons off the road.' I shouted to the
" signalman to block both the lines, and called to the
" porter to run up the down-line with a flag. I knew
" the express would not be a great while before it
" would be due. I then went to see where the
" waggons were off the road. I found three waggons
" off the rails; the southernmost of them loaded with
" coprolites, and the two next loaded with sand. It
" seemed to me that they must have struck the
" crossing-point and have taken to the down-road
" loading-siding. I have never known anything
" get off in the same way before. I did not see
" the signals put to danger. I noticed that they
" were at danger when I went to the signal-cabin to
" give instructions to send a man up the line. I could
" see the arms of the distant-signal in the proper

" position of danger, and the home-signal as well. I " cannot say whether I could see the lights. It is the " rule never to allow a goods-train to cross over the " down-line after the fast-train leaves Hitchin. I " think there is nothing extraordinary in allowing it to " cross so long as the fast train had not left Hitchin. " I did not see the passenger-train approaching until " it had got nearly to the home-signal. The goods-" train standing across the line was between me and " the passenger-train. I saw the engine-driver " between the engine and the ground, and it seemed " to me almost as if he was falling from the engine. " I did not see the fireman until after the accident. " I did not notice whether the steam was shut off, the " position of the reversing-lever, or whether the " breaks were on. My attention was taken up with " blocking the line, and telegraphing for assistance. " I think the engine of the passenger-train struck two " of the waggons which were off the rails, but I am " not sure how many were struck altogether. I did " not know what notices were received by the signalman " with regard to the passenger-train. I trusted to " the signalman not to allow shunting after any train " had left Hitchin. When I saw the three waggons " off the rails I told the driver to set back, so that the " waggons might be detached, and then I sent the " driver ahead to try to draw the other waggons clear " of the main line. We tried to move the three " waggons, and being unable to do so, I said 'Let us " try one of them.' It was immediately after that " the collision occurred. The foreman-platelayer said " 'For God's sake get out of the way, the express is " 'coming.' I went across the up road and jumped on " to the platform. I was not aware when I told the " porter to run back and block the line that the " signalman had received 'train-on-line' for the pas-" senger-train from Cadwell, but I heard two sharp " whistles when the passenger-train was somewhere " near the down 'home'-signal, and immediately I " saw the driver as if he was jumping or falling off " the engine. I scarcely knew where I was standing " at this time."

George Bygrave says: "I am a porter at the " Arlesey-Siding station, and have been there for a year " and eleven months. I saw the up goods-train " arrive at the station about half-past three on 23rd " December. I was helping to load some goods on a " trolley in the Asylum siding, and saw the goods-" train backing to cross the down-line. I saw the " goods-train stop, heard the signalman tell them to " go right in and heard some platelayers and other men " standing there shouting that some of the waggons " were off the road. I met Mr. Walters coming up " the platform. He told me to tell the signalman to " block the road both ways. I ran to the signalman " and told him to block the road both ways He said he " could not stop the down-express at Cadwell because " she had left Cadwell, and the signalman threw me out " a flag and told me to run up the line and stop the ex-" press. I ran as fast as I could, and got close to the " 'home'-signal when the express passed me. I could " see the express coming when I started to run. I " think the express was then near the distant-signal. " It was coming at a good speed. I was frightened " and could not tell whether the steam was on or not. " I saw the fireman step from the foot-plate to the " bottom step of the engine as it passed the 'home'-" signal, and then drop off just before reaching a " disc-signal near No. 8 points. I saw him topple " over two or three times head first. I did not see " the driver at all. I went at once to the fireman, " who appeared to be nearly dead. The train was " then going at very good speed. I saw that the " 'home' and 'distant' signals were at danger before " I started to run southward. I had not noticed the " signals until I was told to run back and block the " road. I did not see whether any of the breaks " were applied or not. I was standing between the " down main and down shunting-siding a little to the " north of the 'home'-signal when the train passed " me. I did not hear the driver whistle."

John Taylor says: "I am a foreman-platelayer " in the service of the Great-Northern Railway Com-" pany, and have been such for five years. I was a " platelayer for six years. I had left work at 3 p.m. " on the 23rd December, and I saw the up goods-" train reach the station about 3.20, when I was " standing at the gate-house of Mill-Lane crossing, " about 300 yards at the north of the Arlesey-Siding " station. I live in that gate-house. I saw the " goods-train being set back across the down line, " and noticed that a goods-truck gave a jump at the " acute crossing on the down line. I called out to " the guard to stop the train, and ran up to see " what was the matter. I found that there were two " waggons of sand and a waggon of coprolites off the " rails. I met Mr. Walters, and heard him call out " to the signalman to block both lines. The guard " said he could not draw them on unless they were " uncoupled, and drawn on one at a time. An attempt " was made to uncouple one waggon off the road, *i.e.*, " the waggon loaded with coprolites from the two " waggons loaded with sand, but before this could " be done the collision occurred. I heard the rush " of the train as the guard was getting under to un-" couple, and I shouted out 'For God's sake come " 'away or we shall all be killed,' and the collision " immediately occurred. I did not notice the signals. " So far as I can judge there would be about four " minutes between the time of the waggons getting " off the road and the arrival of the passenger-train."

Mr. Johnson, engineer-in-chief of the Great-Northern Railway, states: "That the point of collision was " 106 yards on the north of the Arlesey-Siding signal-" cabin, and 283 on the north of the Arlesey-Siding " down home-signal, and 898 yards on the north of " the down 'distant'-signal. The gradients between " Hitchin and the point of collision are, from Hitchin " in a northward direction for $1\frac{1}{2}$ miles 1 in 200, " falling towards the north, then 1 in 264 for 2 " miles, falling in the same direction, and the down " distant-signal stands at the north end of that " gradient. From the down distant-signal 1 in 440 " for two miles, including the Arlesey-Siding station " and the point of collision. The line is perfectly " straight from the Cadwell signal-cabin to and " through the Arlesey-Siding station, and for some " distance beyond. This cabin is 2 miles $25\frac{1}{2}$ chains " on the south of the Arlesey-Siding cabin. There " are the following signal-cabins between Hitchin and " Arlesey-Siding station: Hitchin-Yard cabin, at 32 " miles from London; Hitchin north-cabin (also called " Cambridge junction-cabin), at 32 miles 15 chains " Cadwell cabin, 33 miles 24 chains; Arlesey-Siding " cabin, 35 miles 50 chains. Each of these cabins " is provided with 'home,' 'distant,' and 'starting' " signals in each direction, excepting that there is no " up starting-signal at Cadwell, as there is no siding " connected with the up line, and the line is worked " by block-telegraph from cabin to cabin, under the " regulations produced. There are three lines of rails " between Hitchin and Cadwell, and only two lines of " rails north of Cadwell."

John Catton, engine-driver, in the service of the Great-Northern Railway, says: "I have been engine-" driver 11 years. I reached Arlesey-Siding at " 3.30 p.m. with a goods-train on 23rd December. " In the first instance I brought my train to a stand " at the 'home'-signal at the north of the station, " intending to put my waggons off there, but the " signalman gave me a green flag to draw me up " through the station, and I proceeded until my train " was clear of the through-road. The signalman gave " me a signal to set back. The guard also from the " hind van called me to set back. I set back to go " into the siding. There were 10 waggons standing " in the siding which I was setting back to, and I ran " slowly to them. I shoved the 10 waggons back as " well as my own train, until the engine came to the " points of the through-road. I still kept shoving

" back, but felt an obstruction, as if I was shoving " against something more than usual. I found that " one of the waggons had got off the road. I ran " towards the signal-cabin shouting 'Block the line, " whatever.' After I had called two or three times " in that way, the station-master came out of the " booking-office, and ran down towards the engine, " asking what was the matter. I told him two " waggons were off the road. The station-master " said, 'Try and pull them ahead.' 'See if you can " pull them clear of the main-line.' I tried to pull " them ahead, but could only move them about half a " waggon's length. Immediately afterwards I saw " the passenger-train approaching. When I first " saw the train the engine was half-way between the " down 'home'-signal and the point of collision. I " did not take particular notice as to whether the " steam was on or off, but jumped off my engine on to " the platform. I found the coupling had broken " between my tender and the break-van behind it, and " I ran forward with my engine to Hitchin to give " notice of the collision. I had seen an extra tail lamp " at the back of the train, and I knew something else " would be following. I noticed the 'home'-signal at " danger before I set back, but I could not see the " distant-signal. There was a mizzling rain, snow, " and slight fog, which prevented my seeing the back " light of the distant-signal. I looked for the distant- " signal before I set back, but was unable to see it. " I passed slowly by the Cadwell cabin, and told the " signalman that there had been a collision at Arlesey- " Siding. I found the second portion of the express- " train standing at the starting-signal of the Cadwell " cabin, and I told the engine-driver, fireman, and " guard what had occurred. I did not see the passen- " ger-train until it was half-way between the 'home'- " signal and the point of collision. The rails were as " bad as they could be, in their worst condition, on " account of the drizzling snow and rain. As far as " I could judge, there was very little difference when " the train passed me between the speed at which it " was running and the ordinary rate of running. I " think the train must have been running at 50 miles " an hour. When I find a distant-signal at danger I " stop as soon as I can. If I found 'home' and 'dis- " tant' signals at danger I should stop outside the " 'home'-signal if I possibly could. I never stop dead " at the distant-signal, but draw inside it, so as to stop " at the 'home'-signal."

William Kirby, fireman in the service of the Great-Northern Railway Company, says: "I was fireman " of the goods-train which reached Arlesey-Siding " station about 3.30 p.m. on the 23rd December. " The engine drew up past the signal-cabin, and then " the guards called us back to cross to the down- " sidings. When about three parts of the train had " been set back into the siding three waggons left the " rails. My mate said, 'Hold on, three waggons are " off the road.' The station-master and the guards " came to the spot. We were told to go ahead. As " we could not go ahead we were told to ease up. " As we were in the act of easing up, my mate said, " 'Look-out, here is the express.' I crossed to my " mate's side of the engine, and looking round the " cabin I saw the engine of the express just passing " the 'home'-signal. Immediately afterwards the " collision occurred. I saw the fireman of the pas- " senger-engine in the air, as if he had just left the " step, or had rebounded from the ground. I saw " nothing of the driver. I then went forward with " my driver and the engine to Hitchin. I did not " notice the signals before the collision. I think the " passenger-train was running at 40 miles an hour " when passing the 'home'-signal, where I first saw " him. I did not notice the breaks of the passenger- " train. The rails were in a very greasy state."

John Ottaway, a signalman in the service of the Midland Railway Company, says: "I have been " signalman seven years. I live in the Midland " cottages at the Cambridge junction, north of the " Hitchin station. I was lighting my distant-signal " on the Midland Railway when I saw a passenger- " train pass, and I held up my hand to the engine- " driver, and the driver returned the salute as a " passing compliment. I had finished lighting my " lamp, had got down the ladder on to the ground, " and had walked about 20 yards from the signal, " when I heard the engine-driver of the passenger- " train whistling for the breaks. It sounded to me " as something extra, the whistling continuing for " nearly a minute, and then I heard a rumbling noise, " like a train entering a tunnel, which I supposed to " be the crash of the collision. I walked up to my " signal-cabin, and then saw a light-engine on the up " road, which I suppose was the engine of the up " goods-train, and directly it had passed I heard the " signalman at the junction saying there had been " a collision at the Arlesey-Siding station. It appeared " to me that the down passenger-train passed me at a " speed of from 40 to 50 miles an hour. The Cadwell " signals were off for it to pass, but I could not see " the Arlesey-Siding signals. I was about half a " mile from the Cadwell cabin when I saw the train " pass me, and I watched it passing that cabin. " Scarcely any time elapsed between the end of the " whistling and the crash of the collision. It was " sleeting at the time, and the rails were very greasy " indeed. When I was lighting my distant-signal I " could see the arm of my semaphore-signal half a " mile from me at danger. I could see distinctly that " the arms were at danger."

John Martin, guard of the goods-train, says: "I " have been a guard for 14 years in the Great- " Northen Company's service. We arrived at Arlesey- " Siding at 3.30 p.m. on the 23rd December. I was " riding in the front break-van just behind the tender. " We drew straight in to the south of the station clear " of the through-road-points. I received a signal " from the signalman to set back across the down line " into the down sidings. We were doing so when " two trucks of sand and a truck of coprolites got off " the rails at an angle of the crossing. We were " coming back steadily across the road when we got " off. I saw from the rear-break, in which I had " ridden back to the siding, that the waggons were off " the road, and I ran up to the waggons to try to get " them on. I told the driver to go ahead to pull them " clear. Finding that he could not pull them alto- " gether, I told the driver to ease up, that I might " unhook one waggon from the other two. I was just " getting under the waggon to uncouple it, when the " platelayer shouted, 'Look out, the express is coming.' " I just had time to run from the waggon when the " passenger-engine struck the waggons. The passen- " ger-engine first struck the front break of the goods- " train, and it struck six waggons, besides the break- " van, altogether; all of these six waggons were more " or less destroyed, and the side of the break-van was " damaged. The goods-train consisted of an engine, " tender, 26 waggons, and two break-vans, 20 " waggons and one break-van had gone into the " siding, the other six with the break-van behind the " tender were struck by the passenger-engine. " When the three waggons first got off the rails, the " coupling broke between them and the 20 waggons " which had gone into the siding, and when the colli- " sion occurred the coupling broke between the tender " of the goods-engine and the leading break-van of the " goods-train. I noticed the down starting-signal at " danger, but did not notice the others. There were " 10 waggons standing in the siding, and my train set " back upon these 10 waggons and pushed them back " about 40 yards, and then they ran away five or six " yards from the break. There would have been room " in the siding for the whole train to go in after pushing " back the 10 waggons. Of the 10 waggons standing " in the siding, I believe five were loaded with bricks " and five were empty."

Frederick Warr, locomotive-foreman at Hitchin, in the employ of the Great-Northern Railway Company, says: "I have been locomotive-foreman for 25 years " (20 years at Hitchin and 5 at Retford). About 3.40 " p.m. on the 23rd December I was called to the collision " which had occurred at Arlesey-Siding. I reached the " spot about 4 o'clock. I found that the express-pas- " senger-train (2.45 p.m. from King's-Cross) had run " through a goods-train. The six hind vehicles of the " express-train were on the rails of the down line and " were not much damaged. The seventh vehicle was off " the rails but standing on its wheels. The next four " vehicles were telescoped into one another, and piled up " in a mass. The rails having then been torn up, four " other vehicles were standing on their wheels in the " ballast at various angles to each other, and more " or less damaged. The leading break-van of the " express, in front of these vehicles, was standing in " its proper position, upright, but mounted on the " bogie-truck of the engine. This break-van was still " attached to the tender, which was in front of it, " on its wheels also in the ballast. The engine " was standing on the driving and trailing wheels, " having lost the bogie-truck from its leading end, and " was 13 yards in advance of the tender. I do not " think the engine and tender and leading end of the " break-van had mounted and gone over the bogie- " truck, but rather that the bogie-truck must have " been cut from under the engine and swung round " on the left side. I think that if the engine had " passed over the bogie the ash-pan must have been " entirely cut away, which was not the case. Some " of the motions, however, were cut away from the " engine. The way-bar was bent. The ash-pan was " damaged, but very little. The leading break of the " goods-train had been struck by the passenger-train, " and was in collision with, and had to be separated " from, the rear break of the passenger-train. It was " just touching the rear break of the passenger-train. " A box-waggon next to the break-van had half its " body cut away, as well as the next waggon to it, of " which the top part was destroyed. The next three " or four waggons were totally demolished and " splintered, the axles having been bent or broken, " and the rails were cut from under the waggons. " The remaining 20 waggons were clear in the siding. " The signals were all against me when I went to the " scene of the accident. The reversing-lever of the " passenger-engine I found in forward gear. The " tender-break was broken, and the hangers wrenched " away. It was therefore impossible to say whether it " had been applied or not. I found the break of the " hind van applied, and I took it off before moving the " vehicles. The front break-van had its gear broken " in mounting the bogie-truck of the engine. It was " moving at the time, and the rails were in the very " worst condition for pulling up quickly. The engine " was fitted with the vacuum-break. I consider the " vacuum-break on the engine to have more effect than " reversing the engine. There are blocks on the " driving and trailing wheels connected with this " vacuum-break. The vacuum-break, as fitted on the engine, was prepared for working the whole train, and some of the carriages were fitted for vacuum apparatus, but it was not applied on that particular train. I consider that if the engine-driver applied " his vacuum-break he would not have thought it " necessary to reverse his engine in wanting to pull " up in a hurry. The break-gear was damaged, and " the wheels were quite free, and I am not able to say " whether the vacuum-break was applied from the " appearance of the engine. I do not think that the " vacuum-break would skid the engine wheels unless " the engine had been first reversed, and then it would " do so. I do not believe that the reversing-lever could " have been knocked forward by the shock of the " collision."

Thomas Skilliter, goods-guard in the employ of the Great-Northern Railway Company, says: "I have been " a goods-guard for about 11 years. On the 23rd " December we reached Arlesey-Siding at about " 3.30 p.m. We slackened speed at the north end of " the station, and then ran forward over the points of " the through-road. We then set back for the down " siding. I was riding in the hind break-van. On " looking back I saw that there was a waggon off the " road. I jumped off my van and ran towards it. " The station-master reached the spot at the same " time. I looked to see where the waggon had got " off. I could not find out how it came off. The " platelayer called out, we made a rush, and the " express was through us. The starting-signal was at " danger. I did not notice the other signals. I did " not see anything of the passenger-train until the " platelayer called out. The passenger-train was then " passing the signal-cabin at a speed, I think, of from " 40 to 45 miles an hour. I saw nothing of the " driver or fireman. I heard no whistling from the " passenger-train. I could not find out how the " waggons got off the road. We came back very " gently against the waggons. We had only pushed " the waggons a very short distance along the siding, " when I noticed the waggons off the road. I am not " able to say whether any of the breaks were applied " on the waggons in the siding. I did not think about " the passenger-train at the time. I have constantly " shunted over this through-road into the siding " before, and have never known a truck to get off the " rails at that spot. There were six waggons to pick " up from the down sidings, and three to put off in the " down sidings. We were obliged to use this through- " road for the purpose."

James Sanders, engine-driver in the service of the Great-Northern Company, states: "I have been " engine-driver for four years. We reached Arlesey- " Siding at 3.37 p.m. on the 23rd December with a " coal-train. I saw the collision, as we were ap- " proaching the Arlesey-Siding station, from the " distant-signal, and we came gently forward to the " station. My guard went back to protect the train. " I unhooked my engine, and came forward to assist " at the station. I went on to the express-engine, and " saw that nearly all the steam had escaped. The " reversing-lever was in forward gear. The regulator " was shut. I looked about for the driver and fire- " man, but could not find them. They were not there " when I arrived at the spot. I could not tell by the " handles whether the vacuum-break had been used; " but I noticed the block was hard on the wheel. I " heard no whistling from the down train, and was " not near enough to form any opinion as to the speed. " The rails were greasy. It was not clear, and it was " not thick weather. I could see the arms on the " signals approaching Arlesey-Siding; but I could see " the arms better than the lights. I had been " slackened at the Arlesey station; but the 'home'- " signal was pulled off to allow me to proceed before " I got there."

James Hill, a signalman in the employ of the Great-Northern Railway Company, says: "I am signalman " at the Hitchin-Yard box, and have been a signalman " for six years next May. My record-book (pro- " duced) shows that the second part of the 1.10 " passenger-train from King's-Cross reached my " station at 2.29 p.m., and departed at 2.33 p.m. " No. 117 train of empties reached me at 2.57, and " started again at 3.25. That went on the slow road " to Cadwell. There it would stop till the road was " clear. No. 143 goods reached Hitchin at 3.14, and " did not go forward. The 2.45 p.m. passenger-train " from London, first part, No. 164, passed here without " stopping at 3.33, and the second part passed me at " 3.37."

William Dislerey, signalman in the service of the Great-Northern Railway Company, states: "I am " signalman at the Cambridge junction or Hitchin " north-cabin. My record-book shows (book pro- " duced) I received 'Be ready' at 3.30 p.m. from

" Stevenage through the yard-box, for the first portion " of the 2.45 p.m. express from King's-Cross. It " passed me at 3.34. I sent 'train-on-line' to " Cadwell at 3.34. I received 'line-clear' from " Cadwell at 3.36. It passed me at a speed between " 30 and 40 miles an hour. I considered that it was " going a little faster than usual."

Mr. F. Warr, locomotive-foreman, Hitchin, wishes to state in correction of his evidence of yesterday, that in place of the trailing end of the passenger-train having coincided with the leading end of the goods-train, he found, on his first visit to the scene of the accident, that it was the last vehicle but two of the passenger-train which was opposite to the leading break of the goods-train after the collision.

Simeon Woodhouse states: "I am a passenger-" guard in the joint service of the Great-Northern and " Manchester-and-Sheffield Companies. I have been " so employed about 12 years. On the 23rd Decem-" ber I was head-guard of the first part of the 2.45 " p.m. train for Manchester. We left King's-Cross at " 2.47, two minutes late. There was no alteration in " the train, and no stoppages after leaving King's-" Cross before the accident took place. My train con-" sisted of an engine and tender, break-van, Liverpool " carriage (a composite), Huddersfield composite, and " the rest of the train was composed of Manchester " carriages, except two composites for Nottingham, in " the rear of the train (*see* Appendix). I rode in " break-van No. 1,053, which was the last vehicle in " the train. It was a four-wheeled break-van with " hand-break. We passed Hatfield about 3.18, five " minutes late, and Hitchin at 3.33, three minutes late. " The train lost time between London and Finsbury-" Park by the engine slipping. It was a heavy train " and the rails were slippery. We lost time up to Pot-" ter's-Bar, during which portion of the journey we " are on a rising gradient. From Potter's-Bar to " Hitchin we ran quicker than usual (with such a " heavy train) until the collision occurred. We have " 15 vehicles on an average as the load of this train, " and we generally slip four carriages at Hatfield, and " run on to Hitchin with 11 vehicles. On this occa-" sion we ran on to Hitchin with the whole train of 15 " vehicles. I was looking out at Hitchin and noticed " nothing unusual. The weather was very dull. It " was between light and dark, and I could not see the " signals very well. I noticed them particularly going " through Hitchin. I did not notice the signals at Cad-" well. I noticed the signals as I approached Arlesey-" Siding station. The distant-signal was properly at " danger. I saw the arm. I could not see the light " for the steam. The arm was fairly out in the posi-" tion of danger. I was from 200 to 300 yards from " the signal. I was looking out before that, but I " could not see by reason of the steam from the engine. " The driver might have seen the signal 100 or " 200 yards further back than I saw it, but the night " was foggy, and he could not have seen it much " further, nor I should think beyond a distance of " 300 or 400 yards. I did not see the home-signal " at all. I applied my break when I saw the distant-" signal at danger. This was about 200 yards from " the signal. We were going at least 60 miles an " hour when I applied my break. We were running " at as fast a rate of speed as we ever go. I applied " my break without any whistle from the engine. I " first heard a whistle from the engine as my break " passed the distant-signal. I heard 'Pop, pop,' twice. " The driver was evidently on the alert and looking " for the signals at the time my break passed the " distant-signal. My break was then on. I pulled " the side window down to look out, thinking the " signalman might have dropped the home-signal, as " the driver did not pull up as I thought he ought to " have done. I saw him standing on the step just " before we got to the home-signal. I still looked " out and saw him jump from the engine. I got up to " apply my break tighter if I could, and just then we " ran into the goods-train. I could not see the train " when I was looking out on account of the steam from " the engine. I did not feel the steam shut off at all. " I should think we were going from 25 to 30 miles an " hour when the collision occurred. My break was " still hard on when this took place. I did not see " the fireman jump off. I felt the shock considerably " and was thrown down on the bottom of the van, and " the back of my head was a little hurt. I can only " account for the train not slackening speed from the " rails being very slippery. A gentleman came to " the train and spoke to me and said, 'Pull yourself " together, guard.' I got out of my van and went " back in the rear of my train, knowing that the " second portion was following close behind. I got " back from 100 to 150 yards when I saw a man with " a red flag, and I asked him whether he was going " back to protect the train, and he said 'Yes.' I told " him to make haste and get as far back as he could. " I then went back to the train, and came across " a body. It was the body of the fireman. I raised " it up and placed it against a signal-post. The body " seemed to be quite lifeless then. I went on to the " front break-van to ascertain if my mate, Thacker, " was there. I knocked at the door, and could not " hear anything of him. I gave the door a good kick, " he then looked out and said, 'Hulloa!' He said " he did not know what he was doing. He appeared " to be stupefied or stunned. I said 'Where is Pep-" per? I cannot see him; get out and look for him.' " He got out then, but he had remained in the van " from the time of the collision until I came to him " some 10 minutes afterwards. I saw the signalman " some time afterwards, but not immediately after the " accident. I first heard the whistle of the driver " about as my van was passing the distant-signal. I " am certain I did not hear it further off. I only " heard the driver whistle twice. I had just finished " doing my work, sorting the parcels, &c., before I " looked out and applied my break, and before I heard " the whistle of the engine. I got up to the raised " portion of my van to put the break on. One of my " slide windows was open, or I should not have heard " the whistle at all. The driver might have whistled " shortly before I heard him, while my attention was " engaged in sorting the parcels or putting on my " break, without my knowing it. I did not, however, " hear him whistle but twice. My break appeared to " act very well, only I could not skid the wheels. " The break was in good order in all respects. I was " looking out before we passed Cadwell. I could not " see for the steam from the engine until we got about " 200 or 300 yards from the distant-signal, and I just " then saw the arm of the signal through the steam. " I cannot tell whether the steam was shut off. I could " feel nothing to show that the steam was shut off on " this occasion. I cannot tell whether the steam or " smoke which I saw came from the funnel or not. " I saw the engine and tender after the accident, but " did not notice whether the vacuum-break was on " the engine, and the hand-break on the tender, or " not."

John Huckle states: "I am a signalman at the " Cadwell signal-cabin in the service of the Great-" Northern Railway Company. I have been at Cad-" well rather more than 12 months. (Produces his " record-book.) I got 'Be ready' for the first portion " of the 2.45 p.m. express from the Cambridge " junction-cabin, which is the north box of Hitchin, " at 3.31 p.m. I received 'train-on-line' from the " same cabin at 3.35. The train passed my box at 3.36. " I did not get 'line-clear' for it from Arlesey-" Siding and I therefore made no entry in the 'line " clear' column of my book. It was my duty to stop " the second part of the express until I got 'line-" clear' for the first part. I got 'Be ready' for the " second part at 3.35, at 3.39 I received train-on-line " for it from the Cambridge junction-cabin. It " arrived at my box at 3.41, and ran past it by about " 20 or 30 yards. I kept my signals up against it,

" according to my block regulations, and because I " did not get 'line-clear' for the first part. (Mr. " Johnson, the engineer, states that the down home- " signal is on the south side of the Cadwell cabin at " a clear distance of 50 yards.) The second part " of the 2.45 p.m. train ran past the home-signal, " and as before stated about 20 or 30 yards beyond " my cabin. It therefore passed the distant-signal, " which was at danger, and ran 70 or 80 yards past " the home-signal, also at danger, before it came to a " stand. In answer to an inquiry by Captain Tyler " as to the general running of the 2.45 train, Huckle " read the following extracts from his train-book.

—	"Be-ready" from Cambridge Junction.	"Train-on-line" from Cambridge Junction.	Train passed Cadwell Box.	"Line-clear" received from Arlesey Siding.
Dec. 16 -	3.32	3.35	3.36	3.38
„ 17 -	Sunday.			
„ 18 -	3.32	3.35	3.36	3.39
„ 19 -	3.26	3.29	3.30	3.32
„ 20 -	3.34	3.37	3.33	3.40
„ 21 -	3.30	3.33	3.35	3.37
„ 22 -	3.29	3.32	3.34	3.36

In answer to Captain Tyler as to the first intimation he received of the approach of the express-train on the 23rd inst.: "I learnt by telegraph from " the Hitchin telegraph office that this particular train " had passed Southgate at 3.1 p.m. The message " was forwarded from Southgate to Hitchin and " transmitted from there. I took notice of the train " when passing my cabin. It was half a minute " longer than it usually is from the time I got 'Be " ready' to the time I got 'train-on-line.' I noticed " nothing special as to the speed when it passed my " box. I think it was going at about the usual speed. " It generally runs very sharp past my cabin. It is " a falling gradient, a straight road, and a good running " line. I noticed nothing unusual in the running " on the day of the accident. I could see my dis- " tant-signals well, both the arms and the lights. It " was not misty, but sleet was falling. The rails " were very slippery. I did not hear any whistling " at all after the train had passed my box. I have " heard that the Midland signalman heard a whistling. " I know the position of the signal where he was " standing. It is about half a mile south of my " cabin and further away from the accident. He " might have heard the whistles because he was " standing in the open, and I was shut up in my " cabin. I am not aware of any person else in the " neighbourhood of my box who heard the whistling. " The first I heard of the accident was from an " engine-driver who came up with an engine from " Arlesey siding past my box. In going past he " made a motion to me by striking his hands together, " which intimated that there had been a collision. " I did not hear his voice, I knew by the movement " of his hands that an accident had happened, and I " was frightened and 'all of a tremble.' I did not " hear of the accident by telegraph. I cannot see " the signals at Arlesey-Siding from my cabin. It is " a long distance. You can see the lights of a night, " but not the arms by day. The lights at Arlesey- " Siding are very good ones. I could not see them " at this particular time of the evening. I gave " 'train-on-line' to Arlesey-Siding as soon as the train " passed my box at 3.36. I have speaking-instru- " ments as well as block-instruments communicating " between my box and Arlesey-Siding, and telegraphic " conversation upon matters connected with the busi- " ness of the Company is carried on, whenever such " is necessary. If the Arlesey-Siding signalman " wished to block the line he would give me one " bell to call attention, and I should give it back " again. He would then give five, and I should " repeat the five bells and place my signals at danger " (if they were off at the time) immediately I got the " five bells. Nothing of the sort was done on this " occasion. The last train previous to the 2.45 " express which passed my cabin for Arlesey-Siding " was a train which passed at 2.38, and I received " 'line-clear' for it at 2.42, my line was clear there- " fore to Arlesey-Siding, and I was at liberty to send " forward any train from 2.42 until the collision " occurred. There was nothing on the down line " between the two cabins in this interval of time. I " heard nothing of any obstruction at Arlesey-Siding, " and I therefore allowed the first portion of the 2.45 " express to go on. There was nothing whatever to " prevent my doing this."

John Lewin states: "I am a signalman in the service " of the Great-Northern Company at Finsbury-Park " station. I have been about 18 months at Finsbury- " Park, and have been signalman upwards of six " years. (Produces his record-book.) I received " notice from Holloway that the first part of the 2.45 " express on the 23rd instant had left Caledonian " junction at 2.51. I received 'train-on-line' for it " as passing Holloway at 2.53. It passed my cabin " at 2.56, and I gave 'train-on-line' to Hornsey, and " 'line-clear' to Holloway at 2.56. I received 'line- " clear' from Hornsey at 2.59. The following are " extracts from my train-book of the running of the " 2.45 express for three days before the accident:—

—	Received "Be ready."	"Train-on-line."	Train passed.	"Line-clear" given.	"Train-on-line" sent.	"Line-clear" received from Holloway.
Dec. 20 -	2.51	2.53	2.55	2.55	2.55	2.57
„ 21 -	2.51	2.52	2.54	2.54	2.54	2.56
„ 22 -	2.53	2.54	2.56	2.56	2.56	2.58

" For the second portion of the 2.45 on the 23rd " instant I received 'Be ready' at 2.55, 'train-on- " line' at 2.56, train passed my box at 2.59, 'line- " clear' given 2.59, received 'line-clear' from Hornsey " 3.2. This train was slackened by signals for the " first portion."

William Chapman states: "I am a signalman in " the service of the Great-Northern Company at " Hatfield north-cabin. I have been there about 2½ " years (produces record-book) on the 23rd inst. I " received 'Be ready' for the first part of the 2.45, " No. 164 down train, at 3.15 from the Bell-Bar " signal-cabin, 'train-on-line' from the same cabin at " 3.16, when the train would leave Red-Hall; it passed " me at 3.17 and cleared the cabin at the 20th mile- " post, a mile and a half north of me, at 3.19. This " was rather late. It was about four minutes behind " the ordinary time, but the intervals of time between " receiving these different notices or signals were " about the same as usual."

Mr. Samuel Owen Mark states: "I am inspector's " assistant in the police department of the Great- " Northern Railway. I was travelling in the train to " which the accident happened on the 23rd inst. I " was riding in, I think, the fourth or fifth carriage " from the engine. It was a Manchester-and-Sheffield " composite, and from the list I have just heard read " I conclude it must have been the fifth vehicle from " the engine, including the front break-van. I " noticed nothing until after I passed Hitchin, and I " then observed we were travelling at a very rapid " pace. After passing Hitchin I began to doze. I " heard no whistle or anything until the crash of the " collision. I was roused up, before I had got to " sleep, by the shock of the accident. There was a " little fog, and it came on to snow a few minutes

" after the accident. My boy was travelling with " me, and after seeing that he was safe, I noticed the " signals to be at danger. The rails appeared wet " and slippery. There were several of the Company's " servants in the train. I know the names of two, " Mr. Kirby and Mr. Woodthorpe of the engineers " department. There were several Great-Northern " clerks. A telegraph-clerk named Allen was one " of them, and I found him in the signal-box when I " went there. He had been riding in the same com- " partment with me, and he volunteered to take " charge of the telegraphing at the Arlesey signal-box " after the accident."

George Kingsley Daniels, says: " I am a small farmer, " and live in the Hitchin Road, Arlesey. On Saturday " the 23rd day of December 1876, about 3.30 p.m., I " was in my field adjoining the Great-Northern " Railway, which is south of the Arlesey-Siding " distant-signal. When I saw the express-train " coming from Hitchin towards Arlesey, and when " the engine was from 150 to 200 yards south of the " distant-signal, I heard the engine whistle, and when " the engine had just passed the distant-signal, the " steam was shut off. I judged the train was going " at the rate of 50 miles an hour. I said to my son " Walter, who was with me, ' That is the express- " ' train, I think there is something in the way ;' my " son said, ' No father, the train is going to stop.' I " watched the train, and noticed that it slacked speed, " and when it got to Arlesey-Siding station I heard " the smash. I then went from my field on to the " line, against the distant-signal, and proceeded down " the line ; and when within 100 to 150 yards from " the signal-box, I found the body of the fireman. I " saw steam from the funnel until the driver passed " the distant-signal, about 20 or 30 yards. It was " then shut off, immediately the whistling ceased. I " was 300 or 400 yards south of the distant-signal. I " could see the arm, but not the lamp, at danger. I " heard two or three sharp whistles as the train ap- " proached the distant-signal. I heard no whistling " before or afterwards."

Conclusion.

The circumstances which led to this collision are simple, and may be briefly stated. An up goods-train, consisting of an engine and tender, 26 waggons, and 2 break-vans, reached the Arlesey-Siding station on the up-line at 3.30 p.m.; and as soon as it arrived the signalman pulled over a pair of points behind it, to allow it to back across the down-line, and to reach the down-line-sidings beyond, in which it was to leave three waggons, and from which it was to take on six other waggons. Whilst the goods-train was thus being backed across the down-line, three of its waggons left the rails, apparently in consequence of the wheels of one of them having been " bumped " off at the through-crossings of the down-line, either in being backed, or as the tail of the goods-train came against 10 waggons which were already in the siding, and which had to be pushed back by the goods-train to enable it to enter the siding. The Arlesey-Siding signalman had previously given line-clear to the Cadwell cabin, 2¼ miles south of him, at 2.41 ; and had received notice by telegraph at 3.18 that the fast passenger-train had passed Hatfield at 3.16 ; and he also learnt at 3.34, from the Cadwell cabin, that the passenger-train passed the Cambridge-junction-cabin, at the north end of the Hitchin yard, at 3.34. He observed that the goods-train was stopped, and shouted to ask why it did not move further back. He learnt in reply that the waggons were off the rails, and turned round at 3.35 to block the line to Cadwell ; but as he did so the Cadwell signalman gave him " train-on-line," which indicated to him that he was too late, as the express-train had already passed the Cadwell cabin. His home and distant signals were at danger, he sent a porter running back with a red flag, he was unable to adopt any further precaution ; and at 3.37, two minutes later, the passenger-train came into collision, at a speed of 20 or more miles an hour, with six of the goods-waggons.

As regards the passenger-train, the evidence is incomplete, inasmuch as the engine-driver and fireman, who were both killed in jumping from their engine, can no longer speak for themselves. This train consisted of an engine fitted with a vacuum-break, a tender fitted with a hand-break, and 15 vehicles, of which two, one at each end of the carriages, were break-vans. It left King's-Cross at 2.47, two minutes late, it lost, according to the head-guard, a little time in travelling to Finsbury-Park and Potter's-Bar, from extra weight and slippery rails, and it ran rather faster than usual through Hitchin, and down falling gradients to the point of collision. The engine-driver, after finding the Cadwell signals lowered, would naturally—however incautious he may now appear to have been—have been running at his highest speed, upwards of 60 miles an hour, in passing the Cadwell cabin and forward towards the Arlesey-Siding station. He was heard to be whistling for the breaks by the under-guard in the front van before they reached the distant-signal, and by the head-guard from the hind van as he passed the distant-signal. A farmer, in his field, south of the distant-signal, heard him whistling for the breaks as he approached that signal, and he was also heard, by another independent witness, to be whistling continuously for the breaks. The two guards state that they applied their breaks, and it may be inferred that the engine-driver, who whistled for them, used his tender-break and the vacuum-break on his engine ; but his engine, nevertheless, came into collison with the goods waggons at very considerable speed, 898 yards within the distant, and 283 yards within the home-signal, worked from the Arlesey-Siding cabin.

In considering the causes of this collision, it was obviously attributable, in the first place, to a want of caution on the part of the deceased engine-driver. It was his duty, having regard to the state of the atmosphere, the condition of the rails, the weight of his train, and the proportion of break-power with which it was provided, to approach the Arlesey-Siding signals at such speed as would enable him to bring his train to a stand at the home-signal if he found the distant and home signals at danger against him. In place of doing so he came into violent collision with the waggons of the goods-train, 283 yards beyond the home signal ; and he must, therefore, be considered to have been running, under the circumstances, at an incautious speed. On the other hand, there is considerable pressure on the engine-drivers of these fast trains to maintain punctuality, and they cannot do so, in accordance with the time-tables furnished to them, without keeping up a very high rate of speed. The line was straight, the gradient a falling one ; and on this particular part of the line a good engine-driver would in practice be expected to make up for any little previous loss of time. The train was unusually heavy, the rails were in very bad condition, the breaks would not, therefore, act efficiently, and these conditions would make a very considerable difference, of perhaps 50 per cent., in the distance within which the train could be brought to a stand. In theory, no engine-driver ought ever to run past a home-signal at danger. In practice, it is too frequently difficult for an engine-driver, running under pressure, to keep time on the one hand, and to avoid the risk of running past signals on the other. The theory is correct, and should be carried out with suitable apparatus, a proper system, and strict discipline ; but the difficulties of the case must not be forgotten, and the above contingencies must be amply provided for, to ensure a reasonable margin of safety, and for the prevention of collisions of this description. In other words, if safety is to be reasonably secured, there should, under the block system properly worked, be no risk of actual collision, when an engine-driver, working thus under pressure, and under considerable disadvantages, and compelled to run at very high speed, is guilty of a momentary

want of caution, or miscalculates his power of stopping his train. The engine-driver of the second part of this express-train, (running five minutes behind the first part,) who found the signals at the Cadwell cabin at danger, in consequence of the obstruction caused by the collision, also ran past the home-signal of that cabin before he brought his train to a stand.

The second question which naturally arises, and to which the foregoing considerations lead, is whether the signalman was justified, with his telegraph-instrument at line-clear, as it had been for 50 minutes, for the approach of the express-passenger-train at full speed, in allowing the goods-train to shunt back across its path, and in depending solely upon his fixed signals for stopping the passenger-train. The line is worked on a so-called block-system, intended to secure an interval of space between trains, and to prevent the possibility of such a collision; but the regulations of the Company did not forbid the signalman thus to obstruct the down-line, after he had received notice from Hatfield and Hitchin of the approach of this fast train, even when it had passed Cadwell, the next block-cabin, 2¼ miles in distance, and say two minutes in time, from him. If the goods waggons had not left the rails the goods-train would doubtless have run clear across the down-line, and the collision would not have occurred; but, as it happened, the signalman was too late, on finding the down-line obstructed, to block back to Cadwell, and thus to cause the passenger-train to be stopped at the Cadwell cabin.

The interval of space which the block-system is intended to secure was therefore reduced to 283 yards, the distance between the Arlesey-Siding home-signal and the goods waggons; and this was insufficient, under the circumstances, to prevent so disastrous a result. The most important lesson to be derived from this collision is one which I have frequently had occasion to point out. The expense and trouble involved in the establishment of the block-system are in great part thrown away, if it is not employed to protect trains thus shunting within fixed signals. Collisions between running trains following one another are very much less frequent than collisions between running trains and trains shunting at stations or sidings. Unless the telegraph-instruments are made use of to *block back* for the protection of shunting trains, the so-called block-system becomes in this respect a delusion and a snare, and the interval of space for securing safety becomes reduced to a distance varying, according to circumstances, from the thickness of the home-signal-post as a minimum to the number of yards between that post and the shunting-train as a maximum. The regulations were inefficient in not providing that before the points were opened for the goods-train to set back across the down-line the obstruction-signal should be given to the Cadwell cabin; and the Cadwell cabin was the proper place for stopping such a train, unless and until the line was again clear for it to run through the Arlesey-Siding station. The Great-Northern Company have, I understand, had for some time under consideration, the question of including such a provision in their regulations, and have since issued an order on the subject.

The third question, which requires rather to be stated than discussed, is the amount of break-power available on the passenger-train. The employment of the vacuum-break on the engine was a step in the right direction, and was, no doubt, only preparatory to its general application in trains of this description. It is sufficient here to point out that if any good system of continuous breaks had been at the disposal of the engine-driver on this occasion, to enable him, on finding the Arlesey-Siding distant-signal at danger, to apply retarding force to every wheel of the train, he would then easily have brought his train to a stand short of the home-signal; and further, that even if a collision had occurred, the application of continuous breaks upon all the carriages would have tended to prevent the fatal results which followed, in consequence of the hinder carriages dashing and mounting on those in front after the sudden stoppage caused in the leading part of the train. In the interest of safety, it is obviously necessary that the break-power employed on a train should be such as to enable it to be brought to a stand within a safe distance, when travelling at its highest speed, not merely in fair weather or under average conditions, but also when the signals are not well seen, when the rails are in their most slippery state, and when the engine-driver is running in all respects under the most disadvantageous conditions.

Whilst, therefore, this collision is attributable to a want of caution on the part of the deceased engine-driver, having regard to the conditions under which he was working, the regulations in force, and the difficulty under which he laboured of combining precise punctuality with strict obedience to signals, it must be considered to be due in a much greater degree to the absence of adequate rules for carrying out the true principles of block-working, by giving the obstruction-signal to the next block-cabin before allowing the goods-train to be shunted across the path of the express-passenger-train, and to the want of more efficient break-power throughout the express-train.

As bearing on these subjects, and on what must be considered the principal causes of this collision, I may quote the following remarks which I felt it my duty to make in my report on the collision at Abbotts-Ripton, on the Great-Northern Railway, on the 21st January of this year:—"But in ordinary weather, line-clear would, "in accordance with the printed regulations, have been "given from Abbotts-Ripton to Wood-Walton, whilst "the coal-train was still shunting on the north of the "Abbott's-Ripton cabin. Under such a method of "block working the interval of space between trains "becomes reduced to the short distance (68 yards in "this instance) between the shunting-train and the "home-signal-post; and sometimes, as I have had "occasion to point out recently, in the case of two "collisions on the Midland Railway, to the thickness, "so to speak, of the signal-post. It is obvious that "the advantages supposed to be derived from the "block-system, by insuring intervals of space between "trains, must under such circumstances be more or "less nullified, and the block-system so worked be-"comes only a delusion and a snare, leading to the "belief that absolute safety is provided when there is "constant risk. And inasmuch as collisions are very "much more frequent between running trains and "obstructing trains than between running trains fol-"lowing one another, the system thus becomes weak "where it most requires to be strengthened."

I may add that other remarks on the same subject will be found at page 23 of my General Report on the Railway Accidents of 1875. In summing up the causes of the 67 collisions which occurred during that year within fixed signals, at stations or sidings, I wrote as follows:—"It will be observed that the remedies mainly "required for reducing the numbers of collisions in "this class, are those which have been so frequently "enumerated. The same conditions are constantly "occurring."

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"Even when a system of block working is in force, "the signalman is allowed to give line-clear as soon "as a train has passed within his home-signal, or is "not required to block back to the next cabin when "an obstruction occurs, or is created at or near his "home-signal, and the interval of space which it is the "object of the block-system to preserve is thus re-"duced, either to the thickness of the signal-post, or "to a few yards beyond it. As railway working is "improved in three respects: by the provision of "sufficient lines and sidings; by proper signal and "point arrangements and interlocking; by efficient "block-working in the hands of responsible signalmen, "under good regulations strictly adhered to, with "continuous-breaks in the hands of the engine-"drivers, to enable them to stop their trains without "fail, without being dependent upon the attention or "assistance of the guards, and within reasonable

"distances, the collisions in this important class will "be materially diminished in number, and will be "attended with less serious consequences."

I have, &c.,

H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

APPENDIX No. 1.

Formation of First Part of 2.45 p.m. Down Express on Saturday, 23rd December 1876.

Engine, No. 8 Tender	Driver, Pepper.			
Break-van	No.	1,063	G.N.	Retford or Liverpool.
Composite	„	102	M.S. & L.	Liverpool.
Composite	„	1,547	G.N.	Huddersfield.
Third - class carriage.	„	490	M.S. & L.	Manchester
Composite	„	716	M.S. & L.	Manchester
First	„	706	M.S. & L.	Manchester
Third	„	235	M.S. & L.	Manchester
Composite	„	29	M.S. & L.	Manchester
Composite	„	101	M.S. & L.	Manchester
Third	„	352	M.S. & L.	Manchester
Composite	„	104	M.S. & L.	Manchester
Third	„	232	M.S. & L.	Manchester
Composite	„	249	G.N.	Nottingham.
Composite	„	1,542	G.N.	Nottingham.
Break	„	1,053	G.N.	Manchester.

Total, 15 vehicles.

Guards, Thacker and Woodhouse.

APPENDIX No. 2.

Locomotive Department,
Engineer's Office,
Doncaster, December 29th, 1876.

Dear Sir, Yours re Driver Pepper.

Thomas Pepper was engaged as a cleaner of engines on the Great-Northern Railway, on 13th April 1849. Was promoted to fireman on 24th August 1850, and to be an engine-driver on 15th August 1853, and has continued to drive ever since. I cannot say how many years he has been an express driver, as there is no record kept of such promotions; but I know from my own personal knowledge that he has been an express driver travelling over the same district for 11 years, and have no doubt was so employed for many previous years, so that he has been altogether nearly 28 years in the service, and over 23 years as driver, during which time he was awarded 44 premiums, amounting to 111*l.* for carefulness and economy.

He was a very steady, careful man, and having no family by his wife, had become the owner of a considerable amount of house property. He never was reported for being the worse for drink, and has always been considered a very temperate man. As an engine-driver he stood very high in my estimation. He was an excellent time-keeper and most careful of his engine. The weight of engine in working order is 39 tons 8 cwts.; tender in working order 31 tons 17 cwts.; weight on bogie of engine 14 tons 10 cwts.; driving wheels 8 feet diameter, 16 tons 5 cwts.; trailing wheels, 8 tons 13 cwts.

The vacuum-break was applied to the driving and trailing wheels, four blocks applied, and had sufficient power to skid all the four wheels. I have no reason to suppose it was out of order. I spoke to Pepper at King's-Cross about it only a fortnight ago, and he was well pleased with it, and understood it thoroughly.

Yours, &c.,

P. Stirling.

F. P. Cockshott, Esq.

Printed copies of the above report were sent to the Company on the 1st January 1877.

GREAT WESTERN RAILWAY.

Board of Trade,
(Railway Department,)

Sir, 13, *Downing Street,* 31*st January* 1877.

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 1st instant, the result of my inquiry into the circumstances connected with the accident which occurred to a passenger train, on the 27th December, on the Calne branch of the Great Western Railway.

In this case, the whole of the vehicles in the train got off the rails, and five passengers and two servants of the company are returned as having been injured, The guard also was so much hurt that he was unfit to attend, but I have since learnt from a statement made to the company's officers that he was unable to give any information that would assist in clearing up the doubts that existed as to what had caused the accident to occur.

The Calne branch is about 5¼ miles in length, and it joins the main line of the Great Western Railway about 23 chains to the east of the Chippenham station. The line is much curved, and has some sharp inclines on it.

This branch line was first opened for traffic in 1863, and it was then laid on the broad gauge of 7 feet ¼ inch, but when the Great Western Railway Company altered the gauge of its branches in the Wilts, Somerset, and Weymouth district, about 2½ years since, this branch line was also contracted to the gauge of 4 feet 8½ inches.

The permanent way now consists of a flat-bottomed rail, said to weigh about 68 lbs. per linear yard, in lengths of 24 feet, partly resting on and secured to chairs with clips on them, and partly placed on and secured to the transverse sleepers of wood, 9 feet long by 9 inches × 4½ inches by means of two clips; there being five chairs, each weighing 21¼ lbs., and three double clips, each weighing 3¾ lbs., under the rail on the transverse sleepers, where the engine and train got off the line. The chairs are fastened to the transverse sleepers by fang bolts, two to each chair, and the two clips, one on each side of the rail, are fastened down on the transverse sleepers by a single fang bolt. The joints of the rails are fixed with two plates, together weighing 19 lbs., and four bolts in the usual manner.

At the time the accident happened the train, consisting of a six-wheeled, four wheels coupled, saddle-back tank engine, running with the coal bunker in front, and chimney behind, and a guard's break-van, and composite and third-class carriages behind it, was travelling in a cutting round a curve to the left, having a radius of 28 chains, and up a short rising gradient of 1 in 106, about two miles from Calne, when the engine suddenly mounted the rails on the outside of the curve, just as it passed under an over occupation bridge, and ran up the side of the cutting, turned round and became reversed, and fell over on its left side and lay nearly bottom upwards. The engine was separated from the guard's break-van, and was greatly damaged: the break-van and the two other vehicles

also followed the engine off the rails, except the trailing wheels of the last carriage, a third-class, which were found on the rails: one end of the break-van was smashed, roof damaged, axle guards bent and broken, and one pair of wheels knocked from under it and the axle bent: the composite carriage had one end smashed and the side steps damaged, it having been thrown over on its left side: the third-class carriage had the steps and one end damaged: these three vehicles were found off the rails to the left of the line.

The following evidence was taken with reference to this accident:—

John Dommett Bishop, surgeon, of Calne, states: "That he was a passenger by the 10.40 train from "Calne to Chippenham, on Wednesday, the 27th December. He thinks they started within a minute of "the right time. He was riding in the last compartment of the middle composite second-class, and is "in the habit of travelling on the line. Directly the "train started he took particular notice of the quick "beats of the engine, and before they had gone a "quarter of a mile his impression was they were "going at a most excessive speed, as the oscillation from side to side was very great, and so much "so that he could not keep his seat next the window. "He was obliged to shift his seat to the centre of "the carriage, in order to balance himself with his two "hands: he felt inclined to catch hold of the net, as "he was afraid there was an accident impending. "This was before they got a quarter of a mile. The "oscillation continued to increase as they progressed, "producing a terror in his mind that some accident "would occur: it continued until they did get off the "line, giving the impression that the sway of the last "carriage would pull the engine off the road. He "feels convinced that the accident occurred within $3\frac{1}{2}$ "or 4 minutes of the time of starting, but he did not "look at his watch. His impression is that the "accident was occasioned by travelling at an excessive speed over a serpentine road. On going "through the bridge he felt the carriage give a lurch, "and he thought it was off the road, but he cannot "say whether it was: immediately on passing the "bridge he felt he was off the rails by the excessive "bumps, and this continued until the carriage was "turned over on its left side. The steam was coming "in at the window, the engine being close to the "carriage. He got through the window, and attended "to the passengers that were hurt, as well as Turk, "the guard, whom he took home."

Henry Stallard, station-master at Calne, states: "That on the day of the accident, the 10.40 train from "his station was waiting for time. It did start at "10.42, being detained by booking two passengers "who came at the last moment. He saw the guard "and engine-driver, also the fireman, before the train "started, and they were perfectly sober. The train "consisted of engine, break-van, composite carriage, "and a third-class carriage; the guard riding in the "break-van next the engine. He saw the train start, "but did not notice it after it had started; it started "in the usual way. The line is straight to the home-"signal, but it then curves."

George Neat, signalman at Black Dog siding (about a mile from Calne), states: "That the train started "from Calne at 10.41, and the reason of his knowing "was, that it was at this time that he heard the whistle "blow. It passed his box at about the usual speed at "10.44. The Black Dog siding is nearly mid-way "between the scene of the accident and Calne station, "and as far as his knowledge goes it was not travelling "faster than usual. He does not keep a record of the "times the trains pass his box. He first heard of the "accident from two boys, who were in the train, who "ran back to him, at his house, where he was having "some luncheon at 11.10. He went for the permanent way men after hearing of the accident, and "then went to the spot and found the whole train off "the line. The engine was more than on its side: "the van was not quite on its side: the next carriage "was entirely on its side. The couplings between "the van and engine were broken. The trailing "wheels of the last carriage remained on the rails: "all the other wheels were off the rails. The guard "had been taken away when he got to the scene of "accident. He noticed that the engine first got off "just under the bridge. He thinks that when the train "went from Chippenham to Calne on the previous journey a chair was broken, because when he got there he "noticed one rail about four inches above the other on "the Chippenham side of the bridge. The end of the "rail towards Chippenham was three or four inches "higher than the rail next to it: in the first rail that was "taken out the end towards Chippenham was bent up "at the end. He thinks this was done on the previous "journey. He cannot see the train from Calne when "approaching his box for above a quarter of a mile "because of the curve: he heard it coming, and after it "passed he saw it for half a mile: he did not notice "that it was swaying about. He has heard of passengers complaining of the rocking, but not more of "late than before: the last complaint he heard was "within the last three months."

William Priestley, engine-driver, 22 years of age, states: "He has been fireman five years, and "engine-driver two months. He had charge of 549 "tank engine on the morning of the 27th December. "He commenced work at 7 o'clock a.m.: he first "left Chippenham for Calne at 7.40 a.m., and got "back at 8.25 a.m.: left Chippenham at 9.15, and "started from Calne back again at 10.48 by his watch. "His train consisted of an engine, break-van, a composite, and third-class carriage, and was formed in this "order. On the journey previous to the accident they "found a weak place in going from Chippenham to "Calne, and he made some remark to his mate on the "subject. They left Chippenham on the previous journey at right time, and got to Calne at right time. On "this journey Abraham Hill, locomotive foreman, drove "the engine, and he acted as fireman. There was no "other person on the engine, and the remark he refers to "was made by Hill to him. When the accident occurred "Hill was not with him, but his mate. He put down the "weak place to an absence of ballast under the bridge, "which he attributes to wet weather: it was on the left-"hand rail going from Chippenham to Calne. He "travelled at the usual rate until the mishap occurred. "He looked at his watch at 10.55, and in about another "minute the accident occurred. The speed he was "going at, at the time, was from 20 to 25 miles an "hour. He felt a sudden jump, and remembered "nothing more until he found himself on the ground "close to the engine on his back, between the "engine and the break-van. After the accident "occurred, he observed that the whole of the train "was off the line, except the last pair of wheels of "the third-class carriage. After he saw all the passengers were out, he went back to examine the rails, "and formed an opinion that the engine got off at "the joint: he found the rail on the Calne side of "the first joint, where the new rail has been put in, "four inches above the other. He did not notice "whether two chairs were broken, but noticed the "one broken on the left-hand side going towards "Calne. The rails, he thinks, were raised from the "sleepers, perhaps two sleepers back. The bolts of "the fish plates of the rail going towards Calne "were broken, all four. The sleeper next towards "Chippenham was in its proper place. The joint of "the two rails was not half an inch apart: there was "nothing more towards Calne that attracted his "attention. He did not notice that the rail was bent "upwards, but he thinks it had been raised from the "sleepers. The road towards Chippenham was broken "up altogether. He cannot say, but he thinks the "carriages got off on the left side, as he was running "towards Chippenham: he also thinks that the carriages pulled the engine round. They were running

" with the chimney behind, they never turn the engine. " He had been working a month to-day on this branch. " He had never made any written reports of the state " of the road, but he reported verbally to his fore- " man 'Hill' that the road was in bad order. He " had never told any of the permanent way men " that there was a bad place at the bridge, and he " had not noticed the bad place before the journey " he mentioned. He was running all that morning " and there had been a good deal of rain. There " was no water at the spot, but it was very muddy " and soft about the sleepers next the joint. On the " journey going to Calne previous to the accident " the engine lurched to the left side as they were " running near the bridge. On the journey when " the accident occurred, he eased the steam about " 100 yards before he came to the place, and re- " marked to his mate that he would ease the steam. " He thought that going from 20 to 25 miles an hour " was going steady, as they are obliged to run at " greater speed on some parts of the line, and on " that part next to Chippenham they were obliged " to slacken to give up the staff. The engine gave " one jump just at the joint where he thinks it got " off. He believes his watch was about five minutes " fast."

Abraham Hill, foreman of locomotive department, states: "He has been an engine-driver for nearly 37 " years. He took the goods train leaving Chippen- " ham at 7.40 a.m. with the same engine as above " witness: also the 8.10 from Calne to Chippenham, " 8.40 from Chippenham, and 9.15 from Calne to " Chippenham, arriving at 9.30 a.m. Priestley took " the train leaving Chippenham at 10.5 for Calne. " He did not drive it, nor was he on the engine. " He told Priestley that he would see the permanent " way men about one or two places in the road: one " was where the engine actually got off the road. " It was raining very hard and he could not see the " permanent way men. He cautioned Priestley not " to run too hard back. He called Priestley's attention " to the slack place under the bridge: they both " spoke of it at one time. He went to the spot after " the accident occurred, about 1 o'clock, and he " looked to the state of the road. The high rail " had got the lowest with the continual wet. He " stopped the men from repairing the road. They " had not taken out the rail where the engine got off " the road. The rail next Calne was about three " inches higher than the one next Chippenham. " There were no marks on the heads of the fish bolts " inside the right rail coming from Calne. The fish " plate inside had dropped down, and the outside " fish plate was about a foot away. He saw no " mark on the top of the rail before he saw the joint " that was broken. He did not examine the engine " after the accident, but it was sent to Swindon on " its own wheels. It had never been off the road " since he had her, and he does not know that it " ever has been off the road. He has been about five " years on the Calne branch. He had called the " attention of the permanent way men, to slack places, " on the same day before the accident on the other " length nearer to Chippenham, but they were not " serious; if they had been, he should have made a " formal report. It is usual wherever he has been " driving for years past, whenever they thought the " road wanted packing a little, to call the attention " of the packers to it. The engine he considers one " of the best he ever knew. He thinks the wet had " caused the rail to go down at the joint: the " weather was very bad and it was just like being in " a pond at the spot. The Calne end of the rail had " not gone down at all. He thinks an absence of " packing under the sleeper next to the fish plate " had allowed the rail to go down."

Henry Wilkins, fireman to Priestley, states: "He " has been fireman six months. He was acting as " fireman to Priestley for the first time that morning " with the train leaving Chippenham at 10.5. There " was nothing that attracted his attention particularly, " but his mate told him before he got to the place " under the bridge that there was a bad place there, " and that he would run steadily over it. He noticed " the place himself as they ran over it, just this side " of the bridge. He thinks Priestley slackened a " little going to Calne. He does not know at what " time they started from Calne on the return journey. " They ran at their usual speed from Calne to the " place where the accident occurred, except that his " mate eased the steam as they approached the place, " and his mate told him he would do so. He thinks " they were running about 20 miles an hour. He " believes the engine got off at the middle joint. He " cannot recollect anything after the engine got off the " road until he found himself on the right side of the " cutting coming from Calne. He saw Priestley shut " off steam after the engine left the rails. He can- " not say at what time it occurred. There was a bad " place under the right rail coming from Calne, just " this side of the bridge, and he noticed this going " from Chippenham on the previous journey."

Benjamin Hollis, inspector of permanent way for nearly nine years, has been in the company's service for nearly 40 years, states: "That the Calne " branch is under his superintendence. He walked " over the branch on Friday the 22nd December. He " had not to give any instructions to the ganger as to " the spot of the accident, but he had with regard to " two or three other places. He got to the place of " accident about an hour and a half after it occurred. " He had no difficulty in making out where the engine " got off the line. He found the chairs under two " sleepers, before reaching the joint where the bolts of " the fish plates had been broken, were broken, and the " corresponding chairs under the left rail were also bro- " ken. The one next the joint was shattered to pieces. " He tried the gauge where the fish bolts were broken, " and it was out of gauge from the damage. The " next joint towards Calne was a little more than a $\frac{1}{4}$ " wide. The cant was $3\frac{1}{2}$ inches at the rail next the " broken joint. It is not a fact that the high rail " became the lowest, as stated by other witnesses. " The cant existed, but he could not say to what " extent. The end of the rail next to Calne was " about $1\frac{1}{2}$ inches above the one towards Chippenham. " The permanent way beyond where the fish-bolts " were broken was all broken up. The ballast at the " joint that was broken was quite dry, and in the " same condition as when they passed over it to-day. " He had never found any of the kind of chairs used " on this branch broken."

John Jeffreys, ganger of platelayers about 13 years on the Calne branch, and 30 years platelayer altogether, states: "On the 26th December they slewed the line " just under the bridge; they shifted it about one " inch; they had not done any lifting. He consi- " dered the water got away very well just by the " bridge. He got to the scene of the accident about " half an hour after it occurred. There were eight " sleepers under the first rail. The first chair was " broken to pieces, the next was broken; the others " were clips, but he cannot say whether any were " broken. He had suspicion that the mark on the " top of the rail was the mark of a wheel. The two " ends of the rails at the joint were not level, and " they also got a little a one side of each other. The " road is better now than it has been for many " years, and he has put hundreds of sleepers in during " the last 12 months. He walked over that portion " twice that morning, and had a good view of the " spot. He was between Calne and the place of " accident, and saw the train when it was running " from Calne to Chippenham: it was running when " it passed him about three-quarters of a mile from " Calne, as fast as it ought to be running. They only " slewed the line on the day before the accident, but " did not take out any sleepers."

John Jeffreys, recalled, further states: "That he "was in the Black Dog cutting when the train passed "him, and after it had gone by, one of the hands "remarked, that he thought the train was going very "fast: that it had been noticed and talked of before: "that the young man who was driving at the time of "the accident was in the habit of driving faster than "the other men, much faster than Mr. Hill was in "the habit of driving: that he had not been told for "many weeks by any of the drivers that there were "slack places on the line: that he went twice over "the line on the morning on which the accident hap-"pened, and before it occurred: that there was no "slack at the spot where the engine got off: that it "was at eight o'clock when he passed over it the "second time."

George Graham, superintendent of the line, states: "That he met Mr. Bishop and another passenger at "Chippenham on the morning of the accident after "it occurred; and the other passenger (named Hunt, "of Wootton Bassett) told him that the train was "going at a very great speed, and that there was "considerable oscillation of the carriage: that he "saw the line gauged, and it was a little slack to "gauge, but he did not see the cant tried."

Thomas Godwin, sub-inspector of permanent way 10 months, and 36 years in the service of the Great Western Railway Company, states: "That he arrived "at the scene of the accident at a quarter-past 12 "o'clock: that he first examined the permanent way, "and he first gauged the line, which was $\frac{1}{4}$ inch slack "or wide, at the joint next before where the engine "left the road, and also tried the cant of the rail "where there was a mark on the top, and found the "cant to be $3\frac{1}{2}$ inches at the end next Calne. He "also gauged it in the middle of the rail, and found "the gauge $\frac{1}{4}$ slack and the cant $3\frac{1}{2}$ inches, as at the "joint: that he also examined the sleepers and found "them sound and no washy place at all: that the "chairs on two sleepers next to the broken joint were "both broken under each rail: that he found the "advanced end of the rail next to the broken joint "bent upwards, and the fish bolts broken, but the "rail did not stand more than $\frac{3}{4}$ of an inch higher "than the end of the next rail: that there was no "soft place under the sleeper next before the broken "joint. No puddle of mud nor water stood there. "Neither was there a soft place under the sleeper "next beyond the broken joint under the right rail: "that it is not the fact that the cant had been done "away with at the broken joint, and the cant and "gauge of the road was right before the portion of "the road that was torn up and destroyed: that he "examined the sleepers under the rail where the "engine mounted, and found them perfectly sound "and the ballast good, and so were those close to the "broken joint: that he saw Mr. Linsley at the scene "of the accident, but did not see him gauge the line, "but he used the same gauge, without a spirit level "on it, as the inspector of permanent way used for "gauging the line: that he rode over the line in a "break-van with the 10.5 a.m. train from Chippenham "on the day before the accident, and returned to "Chippenham with the 10.40 a.m. train, riding also "in the break-van, and felt nothing wrong at that "spot or at any other part of the line, and he also "saw Abraham Hill the day before the accident in "the afternoon and he made no complaint whatever "to him."

Alfred Bullock, second man in the gang of plate-layers on the length where the accident occurred, 13 years in the service of the company, states: "That he "was in the Black Dog cutting at the time of the "accident, and when they heard of the accident he "went to Calne to fetch some tools, whilst the other "men went to the accident, and he followed to the "scene of the accident about an hour afterwards, and "when he got there he found the sleepers in quite "good condition and on a good firm footing. No "soft places where the engine mounted behind the "joint, and that the ballast was not washed away "from underneath the sleepers neither on the high "side (right) nor the low: that the gauge was $\frac{1}{4}$ "slack and the cant $3\frac{1}{2}$ inches at the place where the "engine mounted: that he saw the train pass when "he was in the Black Dog cutting, and he thinks the "train was travelling at the least 40 miles an hour, "and he made the remark to his mates that if the "driver ran at such speed he would be off the road "before long. He also stated that he cautioned the "driver the night before, against running so fast at "the Black Dog bridge, where there is a very sharp "curve."

Joseph Wiltshire, engine-driver in the service of the Great Western Company, states: "He was tra-"velling by the train that met with the accident, and "was riding in the middle carriage. He cannot say "at what time they left. He did not perceive any-"thing unusual with the train. He thinks it was "going about 25 miles an hour when the accident "occurred. They did not go so fast before the "accident occurred. He thinks 25 miles an hour "the highest speed they ever attained. He does not "know at what time the accident took place as he "had to attend to some relatives that were injured, "but he thinks about five minutes after leaving "Calne."

I visited the scene of the accident on the 5th instant, and a new rail which had been put in under the right rail coming from Calne, was pointed out to me as the spot where the train had got off. The old rail which had been taken out was lying alongside of the new rail. This old rail was slightly bent up at the Chippenham end and also a little bent inwards. I observed a slight continuous mark on the top of this old rail, commencing about 10 feet from the Chippenham end of the rail, without having had my attention called to this mark by anyone, and I had no doubt that this mark had been made by the flange of the right wheel of some vehicle, probably the engine: 6 feet nearer to Chippenham, a chair under each rail had been broken, and 3 feet further on, a chair under each rail had been smashed, and 1 foot still further ahead, the four bolts of the fish plates on the outside of the right rail had been all marked and broken, and the fished joint had been broken. This was evidently done by the flange of a right wheel running on the outside of the right rail, which had also marked the outside flange of the right rail, while the broken chairs under the left rail must have been broken by some left wheel of the rail. From this point forward, for a distance of about 80 yards, I was informed the permanent way had been broken up by the train getting off the rails, and had been renewed. The end of the next rail (still on the right side) adjacent to the broken joint was slightly marked on the inside of the rail, and the flange of the same rail on the outside was also marked by the flange of the wheel.

These indications all clearly proved that the fracture of the fished joint bolts was an effect, and not the cause of the accident.

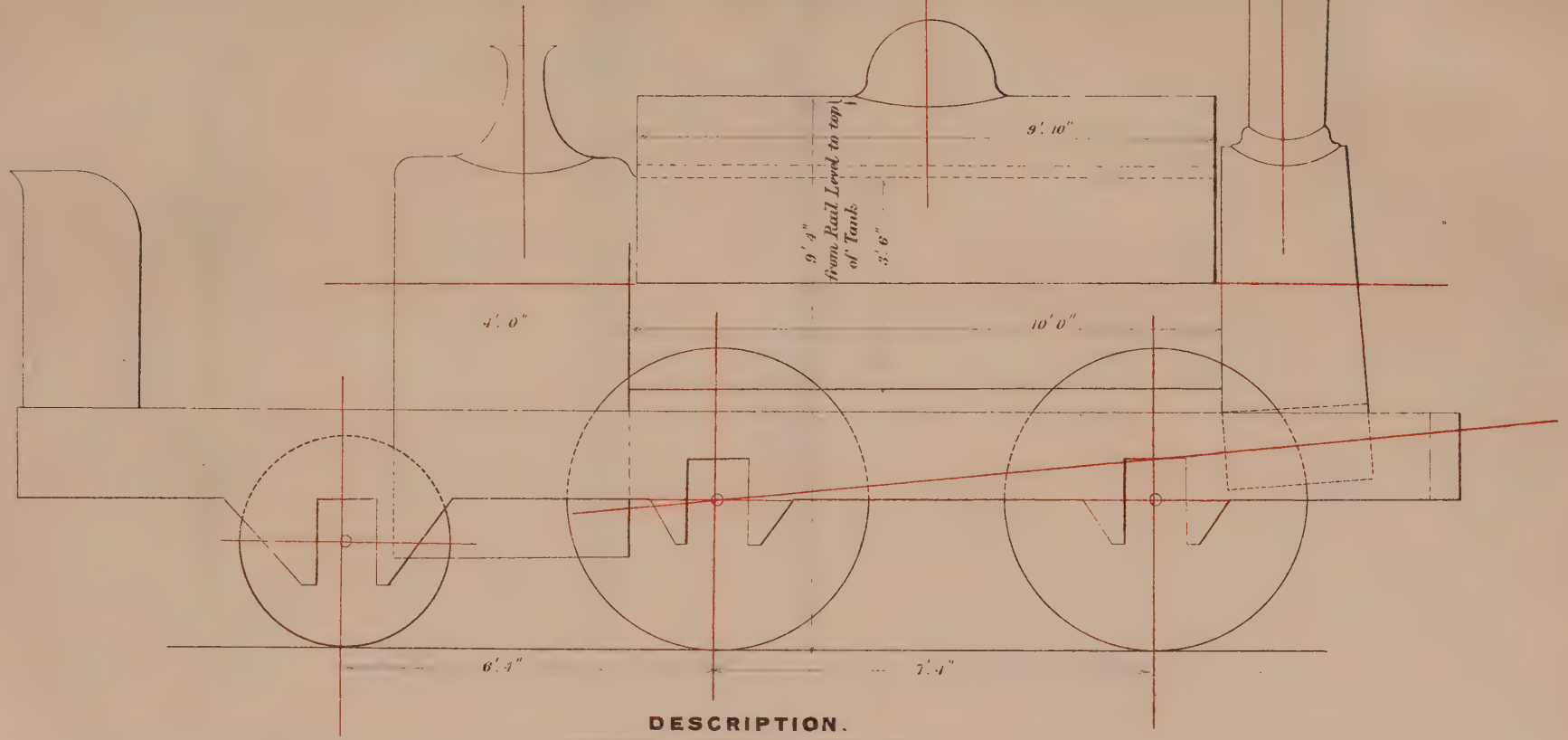
I was told that the permanent way back towards Calne had not been meddled with since the accident, and I then noted the gauge of the line and the cant of the rails at 16 consecutive rail joints, or 128 yards towards Calne as follows:—

At the first joint where the old rail was taken out, the gauge was $\frac{1}{4}$ inch wide, and the cant $3\frac{1}{2}$ inches.								
2nd joint	"	over	$\frac{1}{4}$	"	"	"	$3\frac{5}{8}$	"
3rd	"	"	full $\frac{1}{2}$	"	"	"	$3\frac{1}{4}$	"
4th	"	"	" $\frac{1}{4}$	"	"	"	3	"
5th	"	"	over $\frac{1}{4}$	"	"	"	$2\frac{1}{2}$	"
6th	"	"	full $\frac{1}{4}$	"	"	"	full $2\frac{1}{4}$	"
7th	"	"	" $\frac{1}{8}$	"	"	"	$2\frac{1}{8}$	"
8th	"	"	" $\frac{1}{8}$	"	"	"	$2\frac{1}{8}$	"
9th	"	"	$\frac{3}{16}$	"	"	"	$2\frac{1}{8}$	"
10th	"	"	nearly $\frac{1}{2}$	"	"	"	2	"

To accompany Colonel Yollands Report of the 31st January, 1877.

PLATE Nº 1.

G.W.R. Nº 549.



DESCRIPTION.

CYLINDERS 15 inches diamr, Stroke, 24 inches,

BOILER 10'. 0" long, 3'. 6" diamr inside.

TUBES, 138 Tubes, 10'. 4½" long, 2" diamr

FIRE BOX, 4. 0" long, 4'. 1⅜ wide, inside 3'. 5⅜ long, 3'. 6⅝ wide, 5'. 1" high

WHEELS, Driving 5'. 0" diamr. - Leading 5'. 0" diamr. - Trailing, 3'. 6" diamr.

HEATING SURFACE, Firebox, 74 sq. feet, Tubes 734 sq. feet, Total 808 sq. feet.

AREA OF FIRE GRATE, 12½ feet super

CAPACITY OF TANK, 640 Gallons

To accompany Colonel Yolland's Report of the 31st Jan.y 1877.

PLATE Nº 2.

GREAT WESTERN RAILWAY.

CALNE BRANCH.

PERMANENT WAY AT SITE OF ACCIDENT.

Scale 1 Foot to ½ Inch



GREAT WESTERN RAILWAY.

CALNE BRANCH

SITE OF ACCIDENT.



11th joint	the gauge was	$\frac{5}{8}$	inch wide,	and the cant	$2\frac{3}{4}$	ins.
12th „	„ full	$\frac{3}{8}$	„	„	$2\frac{5}{8}$	„
13th „	„ „	$\frac{1}{4}$	„	„	$2\frac{1}{2}$	„
14th „	„ „	$\frac{3}{8}$	„	„	$1\frac{1}{2}$	„
15th „	„ bare	$\frac{1}{4}$	„	„	$\frac{7}{8}$	„
16th „	curve changes	$\frac{1}{4}$	„	„	$\frac{1}{2}$	„

Here it may be observed that the cant is gradually diminished as the commencement of the curve is approached, and in no instance is there any tightness of the gauge, and this part of the line was in fair order.

The engine No. 549, which was drawing this train, was a 6-wheeled, 4 wheels coupled saddle-back tank engine, having 15-inch cylinders and 24 inches stroke, with the leading and driving wheels of 5 feet in diameter, and the trailing wheels of $3\frac{1}{2}$ feet in diameter, the length of the wheel base being 13 feet 8 inches.

This engine was weighed when sent out of the shops at Swindon on the 7th January 1876, with the tank full, and showing 7 inches of water in the gauge glass, but with only 7 cwt. of coke instead of the usual complement, varying from 20 to 25 cwt., the weights on the several wheels being as follows :—

—	Left.		Right.		Total.	
	Tons.	Cwt.	Tons.	Cwt.	Tons.	Cwt.
Leading wheels -	5	6	5	6	10	12
Driving „ -	5	13	5	13	11	6
Trailing „ -	3	11	3	11	7	2
Total -	14	10	14	10	29	0

The engine in its damaged state, without any coke, and with only 4 inches of water in the gauge glass, was weighed again on the 16th January 1877, with the following results :—

—	Left.		Right.		Total.	
	Tons.	Cwt.	Tons.	Cwt.	Tons.	Cwt.
Leading wheels -	5	$2\frac{1}{2}$	4	$8\frac{1}{4}$	9	$10\frac{3}{4}$
Driving „ -	4	$17\frac{1}{4}$	5	$1\frac{1}{2}$	9	$18\frac{3}{4}$
Trailing „ -	3	1	2	19	6	0
Total -	13	$0\frac{3}{4}$	12	$8\frac{3}{4}$	25	$9\frac{1}{2}$

When weighed again on the following day with the driving springs removed, and the weight taken off the leading and trailing springs, the results did not mutually differ from this last weighing. When examined immediately after the accident the top plate of both the driving springs were found broken, but not under the buckle, the fractures being apparently fresh ones, and these exhibited no flaws : and when the other springs were taken off and examined on the 17th instant the top plate of the right-hand leading spring was found broken under the buckle, and the fracture had the appearance of having been done some time, and one of the right-hand trailing volute springs was also found broken, the fracture indicating that it had recently taken place. As the engine was running with the trailing wheels in front, when the accident happened, a previous fracture of the right-hand leading spring would have allowed that end to sink and the left trailing end, then in front, to rise slightly, and to have less weight on the left trailing wheel, effects which might have exercised some influence in throwing the engine off the rails on the right or outside of the curve. I should also state, as the facts bear upon the question, as to what caused this accident to occur, the details of the damage which was done to this engine.

Framing. Both frames bent at the trailing end : footsteps, right-hand side, torn off : right-hand leading and both trailing life-guards broken off : back corner plate badly damaged : motion plate bent.

Motion. Reversing handle and quadrant broken off : regulators, rod and guide, doubled up : both outside coupling rods bent.

Springs. Right-hand leading, both driving, and one volute spring broken.

Miscellaneous. All tank rods bent and damaged : right-hand injector and injector gear bent : safety valves cover and dome badly damaged : lubricators broken off : gauge cocks and water gauge broken off : both whistles and blow-off cock broken off : one leading and one trailing buffer broken off : panel plate torn off : weather board doubled up.

Tank and coal. Tank crushed, coal bunker destroyed.

Bunkers, &c.

Smoke-box. Stove in.

The engine appears to have run about 80 yards after getting entirely off the rails.

It will be seen that the statements made by the servants of the company cannot be reconciled, as far as regards the speed at which the train was travelling when it met with the accident, and as to the state in which the permanent way was found immediately after it occurred.

The company's working time tables allow 15 minutes for the performance of the journey, and I have been shown the time which has been returned to the company as occupied in making each trip by all passenger trains during the month of November last. In no case is less than 15 minutes returned, but in many instances it is more. I learnt, however, from the district locomotive superintendent, Mr. Linsley, that the district locomotive foreman, A. Hill, who was driving the engine for the two first trips to Calne and back on the morning of the accident, and W. Priestley, who was driving the engine at the time of the accident, had each in one instance returned the time occupied as being only 10 minutes, on the 8th and 9th December, which, as the distance is a little over $5\frac{1}{2}$ miles, would give an average speed of upwards of 33 miles an hour ; but as the train staff has to be given up at the junction at Chippenham, this rate must be somewhat exceeded in order to do the journey in the time stated.

The engine-driver, W. Priestley, states that he was driving at the time at from 20 to 25 miles an hour, the time occupied from the departure from Calne to the time of the accident being eight minutes, which would only give an average speed of 15 miles an hour : the fireman, H. Wilkins, thinks the speed was about 20 miles an hour : a signalman, G. Neat, at the Black Dog siding, half-way between Calne and the spot where the accident occurred, says, that as far as his knowledge goes, it was not travelling faster than usual ; and an engine-driver in the service of the company, J. Wiltshire, who was a passenger riding in the middle carriage, thinks it was going at 25 miles an hour, and that the accident occurred about five minutes after leaving Calne.

On the other hand, Dr. Bishop, of Calne, who was a passenger in the train, and who accidentally met me at Chippenham on the 5th instant, as I was proceeding to the scene of the accident, volunteered to state what he knew about it, and he described the speed as most excessive, and stated that he thought the accident occurred in $3\frac{1}{2}$ or 4 minutes after leaving Calne. The latter interval of time would require an average speed of 30 miles an hour, and the former of nearly 35 miles an hour. He also spoke to the "great oscillation" from "side to side of the carriage," the centre one, in which he was riding.

Another passenger (Mr. Hunt, of Wootton Bassett), informed Mr. Graham, the company's district superintendent, when he met him on the morning of the accident, that the train was going at great speed, and that there was considerable oscillation of the carriage.

The ganger of the platelayers, J. Jeffries, who, with his men, was in the Black Dog cutting, three-quarters of a mile from Calne, states that one of the men remarked that the train was going very fast : and that it had

also been talked of that the young man who was driving at the time of the accident was in the habit of driving faster than the other man.

The second man of the platelayers, A. Bullock, said he thought the train was travelling at 40 miles an hour, and that he made the remark at the time to his mates that if the driver ran at such speed he would be off the road before long, and that he had cautioned him the night before the accident against running so fast at the Black Dog bridge, where there is a very sharp curve (22 chains radius).

The excessive amount of the damage done to the engine and the three other vehicles in the train, is, to my mind, the strongest confirmation which could be adduced, that the train was travelling at high speed when it got off the rails.

The evidence relating to the state of the permanent way, where the first new rail had been put in, under the right rail travelling from Calne is even more contradictory than that as to the question of speed. The witnesses connected with the locomotive department had apparently all arrived at the conclusion that the engine got off at the joint where the rails had been fished, and the joint broken, and they represented that there was a slack place under the bridge which had been noticed on the previous journey, and the locomotive foreman, A. Hill, stated that in consequence he had cautioned the driver, W. Priestley, to go steadily there: and he told me also that when he got to the spot after the accident had taken place, he found that the right or high rail had become the low rail at this joint. All parties agreed that the joint at the Calne end of this rail was in the state in which I found it, with a slight slackness of gauge and a fair amount of cant: the slackness of gauge on the curve being actually desirable.

It further appears that the line was slewed the day before the accident, and the inspector of permanent way, B. Hollis, stated that "it is not a fact that the "high rail became the lowest." "The cant existed, "but he could not say to what extent."

It is a remarkable fact that when accidents of this kind occur, which are frequently attended with most serious results, no proper record of the actual state of the line is taken, before steps are resorted to for putting the road in order. In this instance all parties agreed that the train had got off the line at a rail just below the over-bridge, either at the Chippenham end of this rail where the fish bolts were found broken, or before this end was reached: 10 minutes would have sufficed for the officers representing the traffic, locomotive and engineers department to have ascertained and recorded what was the state of the line as regards the gauge and cant of the rails at each of the eight transverse sleepers under this rail, and also to have ascertained whether there was, or was not, any slackness under any of the sleepers or any absence of ballast for packing these sleepers. This is the first portion of evidence which should be noted, and ultimately taken into consideration, in combination with that relating to the state of the rolling stock, and the speed at which the train was travelling, before a conclusive opinion can be formed as to the cause of the accident; and such record would then be binding against the respective departments concerned. As it now is in this instance, there is the most glaring discrepancy in the evidence supplied by the locomotive and engineers department as to the state of the permanent way.

A sudden diminution of the cant of the rails in a rail's length of 24 feet from $3\frac{1}{2}$ inches to level, coupled with the circumstance of a train travelling at high speed on a curve of this kind, would account for the leading wheel of the engine mounting the right rails and then dropping outside the outer rail of the curve: and if to this be added, the fact that the engine was travelling with the wrong end in front, and with from $2\frac{1}{2}$ to $3\frac{1}{2}$ tons less weight on the front than on the rear wheels, and probably with a spring over the right leading, but at the time as the engine was running left trailing spring broken, the same result might possibly follow, if the cant had only been partially done away with in this rail's length, as may be inferred from the evidence of the inspector of permanent way.

As the result of my inquiry, I should state that I attribute the accident to a young and inexperienced driver travelling at too high a rate of speed with the engine running with the wrong end in front, and probably having one of its springs broken, over a portion of the line not in first rate order.

I think it is to be regretted that the railway company were not required, before the line was opened for traffic, to put down an engine turn-table at Calne station in accordance with the requirements of the Board of Trade, so as to avoid the necessity for running with the wrong end of the engine in front.

I have, &c.,

W. Yolland,
Colonel.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th February 1877.

LANCASHIRE AND YORKSHIRE RAILWAY.

Sir, *Liverpool, 28th December* 1876.

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 19th instant, the result of my inquiry into the circumstances connected with the collision which occurred on the 13th instant, between two portions of a mixed train, which had become disconnected, while running between Freshfield and Ainsdale stations on the Liverpool, Crosby, and Southport section of the Lancashire and Yorkshire Railway.

One passenger complained of having been injured on this occasion, but the injury received is believed to be slight. A very small amount of damage was done to the rolling stock.

It appears that on the day in question the 11.20 a.m. passenger train from Liverpool to Southport consisted of a tank engine, nine carriages, and two break-vans, one at each end of the train, with two guards, one riding in each van, and with four carriages adjacent to each van, fitted with continuous breaks. The train left Liverpool one minute late, and after stopping at several intermediate stations it reached Formby station, $11\frac{1}{8}$ miles from Liverpool, at 11.50 a.m.

After the passengers had got out, the train was shunted into a siding off the down line and south of the station platform, and three loaded trucks, which had been brought empty to the station on the previous evening and there loaded, were attached to the rear break-van, in which the head guard of the passenger train was riding, and the train left at 11.52 for Southport.

The evidence of the Company's servants is as follows:—

Charles Higson, guard of the 11.20 a.m. train from Liverpool to Southport on Wednesday the 13th December, states "that he has been a guard on the "Lancashire and Yorkshire, and East Lancashire "Railways for 12 years: that his train consisted of "nine carriages and two break-vans, when they "started from Liverpool one minute late: that the "train reached Formby about 11.50 a.m., where

" they picked up three loaded waggons: that his " train was backed into a siding off the down line, " and the trucks were then hooked on: that he rode " in the last van, and he saw the leading truck " hooked on to his van, but he did not look to the " couplings between the other trucks in the train: " that there were not any side chains used, as the " Company does not make use of them: that the " train started at 11.52, and reached Freshfield all " right and passed on, and as they were running " between Freshfield and Ainsdale the two last " trucks became detached from the front truck, and " on looking back he saw them following: that he " thinks they were 300 yards behind his van when " he first saw them: that he allowed the train to go " on for some time, while he was considering what " he should do, and then he put his break on, and " released it again: that he thinks they were travel- " ling about 30 miles an hour when he first discovered " that the trucks had become uncoupled,—and the " trucks overtook and ran into the train about half a " mile on the Liverpool side of the Ainsdale station: " that his train had just come to a standstill when " the collision occurred: that a window in his van " was broken, but none of the carriages were " damaged, but the truck behind his van was " damaged, and the second truck which ran into " the first had a buffer casting broken: that the day " was bright and clear, but frosty: that no one com- " plained of being hurt at the time, nor until after " arriving at Birkdale station, where one passenger " complained, and said that he was frightened and " sickly, and not fit for his work that day: that they " left Ainsdale station 20 minutes past 12 o'clock.

Paul Leadbetter, porter at Formby station four years, states "that five trucks were put into the " siding off the down line on the previous evening, " and then loaded: he uncoupled the third truck from " the fourth, so as to allow three trucks to be taken " away by the 11.20. a.m. train from Liverpool on " the 13th December, and, as far as he knew, they " left all right, after he had coupled the first truck " to the guard's van: that the first truck was double- " coupled to the second truck, and the same was the " case between the second and third trucks."

Thomas Curnan, second guard of the 11.20 a.m. train, a guard about one year and seven months, states " that he rode in the van next the engine (tank) " No. 28, and that the first thing that attracted his " attention while travelling between Freshfield and " Ainsdale was a check in the speed of the train by " the application of the breaks at the tail of the " train; and on looking back through the elevated " window of the van, he observed the head guard " making signals with his hand, but he could not " understand what Higson meant by his signals, and " he could not see anything behind the train, although " he looked out at the side of the train, which at " that time was travelling on a straight road: that " he then put his break slightly on, and then got " out of his van at the platform side, and he then " saw that two waggons were loose, and only a short " distance from the tail of the train, which stopped " in a few seconds afterwards, but he believes the " waggons must have struck the train before it " actually stopped: that the driver did not shut off " the steam until some time after he felt the check in " the speed of the train: that there were four " carriages fitted with continuous breaks attached " to his van, and the same number at the tail of the " train: that when he got out of his van the train " might be travelling about five or six miles an hour, " and he gave a signal to the driver to go ahead " before he got off the foot-board of his van on " seeing that the trucks had broken loose."

Richard Pearson, driver for 23 or 24 years, states " that he had tank engine No. 28 on the morning of " the 13th December, with the 11.20 a.m. train, " and left Liverpool nearly at the proper time: that " they arrived all right at Formby, and after the " passengers had got out he backed the train into a " siding off the down line for the purpose of bringing " out some trucks, and started after receiving a signal " from guard Higson: that they reached Freshfield all " right, and left that station all right, and on getting " about three parts of the way towards Ainsdale, " his attention was called by the train being pulled " up, and he then shut off the steam and looked back: " that he was travelling at their ordinary speed when " he felt the check, and when he looked back he saw " that the waggons had left the train: he saw them " some distance off, and then he put on his steam " again, and opened the whistle for the breaks to be " taken off, as he saw that it would not do to stop, " but he could not get away into speed until the " collision had taken place, as he was pulled up by " the breaks while the steam was still on: that he " did not feel any shock from the collision: that he " looked back on the platform side, but did not see " the front guard out of his van, and did not get " any signal from the front guard. He did not want " any signal, as he knew what he had to do, and they " did not travel far after feeling the check."

From the preceding statements, it appears that the passenger train with three loaded tucks at the rear of the train left Formby all right at 11.52, reached Freshfield, rather more than a mile and a half from Formby, all right, and was proceeding towards Ainsdale station, which is nearly two miles from Freshfield, at its ordinary rate of speed, stated to be about 30 miles an hour, when the head guard discovered that the two last trucks had separated from the leading truck, which was still attached to the rear van of the passenger train, and had been left some distance behind.

From an error of judgment he appears to have put his continuous breaks too hardly on, and, in conjunction with the continuous breaks under the control of the second guard in the front van, to have brought the train to a standstill when it should have been permitted to run quietly ahead.

The train was travelling at the time down an easy falling gradient of about 1 in 650, and the slight collision occurred about half a mile south of Ainsdale station.

No explanation could be obtained as to the cause of the second truck becoming uncoupled from the first. It is said to have been double-coupled, and evidently travelled safely for several miles, and no coupling was found broken; but the collision clearly points out the impropriety of attaching loaded trucks at the tail of a passenger train, without any break van being at the rear to control their running, if they happen from any cause to become detached.

I have, &c.,

The Secretary,
(Railway Department),
Board of Trade.

W. YOLLAND,
Colonel.

Printed copies of the above report were sent to the Company on the 12th January 1877.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
SIR, 9 *January* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 1st instant, the result of my inquiry into the circumstances connected with the collision which took place on the 21st ultimo, at St. Helen's station, on the London and North-western Railway.

In this case, the 4.50 p.m. express train from Wigan to Liverpool (which was 34 minutes late in starting, owing to the late arrival at Wigan of the train from the North with which it was in connection), came into slight collision with the 5.5 p.m. stopping train, also from Wigan to Liverpool, which latter train was stopped outside the up home-signal at St. Helen's station while another passenger train from Rainford to Ditton was detaching and attaching vehicles at the station.

Eight passengers have complained of slight injury. No servants of the company were injured. In the express train the buffer-beam and lamp sockets of the engine were slightly damaged. In the stopping train the rear buffers and framing of the break-van were damaged.

The approach to St. Helen's station from the North is on a curve, and down a gradient of 1 in 200, which latter terminates about 200 yards from the north end of the platforms. The up home-signal, placed about 35 yards from the north end of the platforms, can be seen for about 400 yards; the St. Helen's up distant-signal, which is also the up home-signal at Pocket Nook junction (the next signal-station), is 350 yards from the St. Helen's up home-signal. Pocket Nook junction up distant-signal, which is also the up home-signal at Gerrard's Bridge junction (the next signal-station), is 580 yards from Pocket Nook junction; and at Gerrard's Bridge junction the single line from Rainford joins the line from Wigan. Northward from Gerrard's Bridge junction to Wigan the line is worked on the absolute block system, but southward to St. Helen's what is called "station-yard working" is in force, trains being passed on from cabin to cabin (if the line is not clear), with caution hand signals after their speed has been reduced by the semaphore signals.

The collision occurred at 5.43 p.m. at a point 165 yards outside the St. Helen's station up home-signal, it having been possible for the driver of the express train to see the van lights of the slow train for a distance of about 180 yards.

The evidence in this case is as follows:—

1. *John Taylor*, seventeen years driver: "I brought "in the local train from Rainford to Ditton, due at "St. Helen's station at 5.31. We arrived at 5.35, "owing to a late start. We had a meat waggon "from Rochdale for St. Helen's to put off into the "good's yard on the down side of the line, and then to "pick up a carriage truck belonging to the Manches- "ter, Sheffield, and Lincolnshire Company from a "siding on the up side of the line. I was backing into "the siding to attach this truck when the collision "occurred. My engine was inside the siding-points. "The time was about 5.42. The evening was dark "but middling clear. I did not hear any whistling "before the collision."

2. *John Mann*, driver seven years: "I was in charge "of the 5.5 p.m. stopping passenger train from Wigan "for Liverpool. We left punctually, before the ex- "press, which was signalled late from the North. "We arrived at 5.35 p.m. at Gerrard's Bridge "junction, where we stopped by signal about two or "three minutes, being detained by the train from "Rainford, which was coming off the branch. We "then passed slowly through Gerrard's Bridge and "Pocket Nook junctions with hand signals, and "stopped clear of the siding-points outside St. Helen's "station. But for the stop at Gerrard's Bridge junction "we should have arrived at St. Helen's station "punctually. We had been standing about two "minutes when the collision occurred. About half a "second before it I heard the break whistle, previously "to which I had heard nothing of the express. The "engine of the Rainford train was not off the main "line, but in the act of backing into the siding when "the collision took place. I had no time to move "forward before the collision, but the blow knocked "us forward, and I stopped the train with the tender "break, and by pulling over the reversing lever. "I did not see the signalman doing anything to "stop the express. After the collision we went into "the loop, in which the Rainford train had been "backing at the time of the collision. The guard's "van was the only vehicle damaged, and that had to "be left at St. Helen's station. A train will stand "where mine was without any breaks being applied. "The signalman gave me no red signal to stop where "I did; but I knew where the fouling-point of the "siding was, and stopped a little short of it."

3. *Ralph Martin*, guard five years: "I was in "charge of the 5.5 p.m. slow train from Wigan "to Liverpool. The Wigan station-master directed "me to start in front of the express, which I heard "was from 40 to 50 minutes late. My train consisted "of five coaches and a van, in which I was riding, "and Inspector Mason. We started from Wigan "about five minutes late; lost time from signals at "Springs Branch, and arrived at Gerrard's Bridge "junction about 15 minutes late, and there we were "detained from 5 to 10 minutes, the signals being off "for the Rainford train, which was standing at the "station. We then drew on by hand-signal past "Gerrard's Bridge junction, and past Pocket Nook "junction, and came to a stand outside St. Helen's "station and had remained there two or three "minutes when the collision occurred, at 5.45 p.m. "I was in the van at the time, and I heard nothing "of the express till its driver gave the break whistle "just before striking us, and before I had time to do "anything. I was knocked down but was not hurt. "My van was not thrown off the line, but was "slightly damaged in its framing and rear buffers. "I picked myself up at once and looked at my watch. "The evening was rather thick. My van had on two "side lights near the front, and a tail lamp. They "were all knocked out by the collision. We should "have shunted at St. Helen's for the express. We "were detained about half an hour, after which we "went on with a fresh break-van, but the same "carriages."

4. *Thomas Ackers*: "I have been a driver about "12 months, and was fireman four years previously. "I was in charge of the engine of the 4.50 p.m. train "from Wigan for Liverpool, and was acting as pilot- "man to driver Harrop, who was not well acquainted "with the line. We left Wigan at 5.24, having first "to stop at St. Helen's. The engine was a single "engine, with a 7′ 6″ driving wheel, cylinder 16″ × 24″, "a reversing wheel, the ordinary tender break, and "no continuous breaks in the hands of the driver. "There were seven vehicles on the train. We were "informed before leaving Wigan by the station-master "that the slow stopping train had preceded us, having "started at right time. The first signals that were "against us were at Gerrard's Bridge junction, and

" we were prepared to stop at the home-signal; but about " 100 yards from the cabin we got a green hand light. " I understood by this green light that there might be " a train in front. At Pocket Nook junction the home- " signal was also against us; but we were called on " again by green hand light, which we could see from " Gerrard's Bridge junction. We passed Pocket Nook " junction at a speed of seven or eight miles an hour; " the signalman there did not speak to us as we passed, " nor had the man at Gerrard's Bridge junction done " so. I expected that there would be a train standing " in the station, but not outside the home-signal. We " did not exceed a speed of seven or eight miles an " hour after passing Pocket Nook, and the first red " light I saw was the right-hand side light of the van " of the slow train, from this side of the over bridge. " This light I at once thought was on the van of the " stopping train. Steam was off at the time, and had " been off from Gerrard's Bridge junction, and the " driver at once reversed, and put on back steam, and " the fireman applied the breaks; the driver also " whistled for the breaks after reversing. The rails " being greasy, and the engine being single, were " reasons why we did not stop so soon as we might " otherwise have done. The speed on collision was " six or seven miles an hour. None of us jumped off. " I had left the driver's side of the engine coming " under the bridge this side of Pocket Nook to look " for the signals; but before this I had been working " the engine."

5. *Thomas Harrop*: "I have been a driver 16 years, " principally upon the main line with goods trains. I " had only been once, about five weeks previously, " over the line between Wigan and Liverpool, before " the trip in which the collision occurred. Being a " comparative stranger on the line I was provided " with a pilot man named Ackers, who stood by me " on the engine. We were first slowed by signal at " Gerrard's Bridge junction, where after reducing our " speed to 8 or 10 miles an hour, we were waved past " with a green light when about 100 or 200 yards " from the cabin, the signalman saying nothing as we " passed. We also got a green light from Pocket Nook " junction, when about 300 yards off, but nothing was " said to us by the signalman there. We passed " Pocket Nook junction at from seven to eight miles " an hour, and were running at about this speed when " I was the first to see the tail lights on the van of a " train after passing through the bridge. Steam had " been shut off the other side of Gerrard's Bridge, and " I reversed, put on steam, and gave the break whis- " tle, opened the sand pipes, and the fireman applied his " break; by these means the speed was somewhat re- " duced and was not above seven miles an hour when we " struck the van. The rails were very greasy. We " none of us jumped off. Hardly any damage was " done to the engine. As soon as I saw the van " lights I pulled Ackers away from the reversing " wheel and caught hold of and turned it myself."

6. *John Taylor*: "I have been guard 12 years. I " was the only guard in charge of the 4.50 train from " Wigan to Liverpool. In consequence of the train " from the North being late we started at 5.24 p.m., " 34 minutes late, with a train consisting of six " coaches and a van, the first stop being St. Helen's, " where we were due 16 minutes after starting. We " were slacked at Laffak siding by signal, and next " at Gerrard's Bridge junction, where, after the speed " was reduced nearly to stopping, we were called on " by hand-signal; I did not see a hand-signal given " from Pocket Nook junction, which we passed at a " speed of five or six miles an hour. On hearing the " break whistle when my van was passing the Pocket " Nook Bridge, I first became aware that a train was " in our way. My break was on, and had been so " from Pocket Nook, and I had not time to do any " more to it before we struck. I hardly felt the " collision, which occurred at 5.44. I was alone in " the van. We got away at 6 h. 8 m. with a fresh " engine."

7. *James McGurk*, relief signalman about two years: "I am acquainted with signal working and " telegraph working. I went on duty at 7 a.m. " on the 21st at Gerrard's Bridge junction. The " Rainford train arrived at Gerrard's Bridge station " at 5.36 p.m., the bell-signal for this train and the " block-signal for the Wigan train having been both re- " ceived at the same time. I had been instructed by the " man whom I relieved, that in case these two trains " were signalled about the same time, to give the " Rainford train the preference, as it had to make " some important connections at Ditton and Widnes; " and I acted upon this instruction not knowing, till " the Rainford train was crossing the junction, any- " thing about the express (except that it was late) for " which I at that time received the 'Be ready' signal " from Laffak. Had I received the 'Be ready' signal " before the Rainford train left Gerrard's Bridge " I should have acted differently. The stopping " train from Wigan arrived at 5.37 and I let it go at " 5.38 by green hand-signal. At 5.41 I got the " express given on from Laffak. I did not lower my " signals, not having got line clear from Pocket Nook, " and as soon as the express passed the distant-signal " I showed a green light, having received a stroke on " the bell from Pocket Nook, signifying that the train " was not clear in St. Helen's. The express passed at " a fair speed at 5.46, having been slacked at Laffak " by my block-signal having been on there. I believe " my mate kept the cabin clock two or three minutes " fast."

8. *William Stynes*, signalman four years: "I came " on duty at 2 p.m. at Pocket Nook junction for an " eight hours shift. I gave the Rainford train clear " signals at 5.36, then the slow train from Wigan " followed with a green light at 5.37, the express " passed at 5.43 also with a green light. I said " to the driver of the latter, 'Steady down, mate,' " but I don't think he heard me. I think the train " passed me at seven miles an hour, and after passing " my cabin I thought he seemed to quicken his speed " and made the remark to a man below 'He is going " 'too fast for my money.' The rails were very " greasy."

9. *Peter Bridge*, signalman 2½ years, all the time at St. Helen's station: "I came on duty at 7 a.m. on " the 21st for 12 hours in Sharp Street cabin. The " Rainford train arrived at 5.35, it first unloaded its " passengers and then crossed the line with a meat " truck into the goods yard; it then returned and was " backing into the refuge siding for a carriage truck " when the collision took place, at 5.43, the engine " of the Rainford train being at the time on the " crossing. The Wigan slow train had arrived at " 5.38 and stopped clear of the refuge siding. The " 'Be ready' signal for the express was given on " from Pocket Nook at 5.38. This was the first signal " I had received with regard to the express; at 5.38 " the points were open for the Rainford train to go " into the goods yard, but there was not room in it " for the whole of the train. As it was dark I could " not say whether there was room in the refuge " siding for the whole of this train. I had intended " to shunt the local train into No. 1 refuge siding " after despatching the Rainford train. The station- " master told me about 5.23 that the local train " would precede the express and was to be shunted " first."

10. *David Moss*, station-master 12 months at St. Helen's, 20 years in the service: "I was informed " from Wigan at about 4.50 that the local train would " precede the express, and was afterwards informed " when the express left Wigan. I told the signalman " that the local train was leaving in front of the " express, and when the Rainford train was on the " platform I told him that the local train must be " shunted as soon as the Rainford train was gone, as " the express was near behind. The Rainford train

" could have been put into the goods yard, had " there been room there, but it was important not " to detain this train as it had important connections " to make at Widnes and Ditton."

The primary cause of this collision was want of due caution on the part of the pilot driver in charge of the express train, who though aware from the signals shown him at Gerrard's Bridge and Pocket Nook junctions, that the line was not clear into St. Helen's station, was approaching it at too high a speed to enable the train to be stopped in the distance of 180 yards, at which distance it was possible for the van lights of the slow train to have been seen. He, no doubt, was calculating on having to stop at the home-signal, 165 yards beyond the point of collision, not anticipating that there was more than one train in front of him, though the rule for station-yard working distinctly states that a driver must be prepared to stop at any moment.

There is no doubt, however, but that this rule places a driver in a very difficult position when running over portions of the line when the sight is obstructed, as in approaching St. Helen's station; and I certainly think that only one train at a time should be allowed to be between the up home signals at Gerrard's Bridge and Pocket Nook junctions and between Pocket Nook junction and the up home-signal at St. Helen's station.

Continuous breaks in the hands of the driver of the express would have no doubt enabled him to stop in time to have avoided the collision.

Orders had, I understand, been given before the collision for the information as to the running of the express trains from Wigan, to be conveyed into the cabins at Gerrard's Bridge junction and St. Helen's, as well as into the St. Helen's station-master's office.

The Secretary, I have, &c.,
(*Railway Department,*) C. S. Hutchinson,
Board of Trade. *Major-General R.E.*

Printed copies of the above report were sent to the Company on the 27th January 1877.

LONDON AND NORTH-WESTERN RAILWAY.

Sir, *Windermere, February* 23, 1877.

In compliance with the instructions contained in the Order of the 5th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 23rd December last at the Burneside station on the London and North-Western Railway.

In this case, the 1.45 p.m. passenger-train from Oxenholme for Windermere came into collision, in approaching the Burneside station, with the 2 p.m. goods-train, Kendal to Windermere, which was engaged in shunting at the station. Four passengers complained of injury, but no servants of the Company were injured, and though two vehicles were thrown off the rails, the rolling-stock was only slightly damaged.

Description.

The Burneside station is approached on various rising gradients, the average inclination being 1 in 106, for nearly half a mile. At the south end of the Burneside station there is a cross-over-road, and on the east of the main-lines there is a siding leading to the goods-warehouse.

The home-signal is on a post on the up-platform, and the distant-signal is 560 yards from the home-signal on the above gradient; but in approaching the distant-signal from Kendal there is a falling gradient averaging, perhaps, 1 in 130.

The passenger-train in question consisted of a tank-engine and seven carriages, two of which were break-carriages.

Evidence.

The engine-driver, *Thomas Dobson,* has been a driver on the Kendal and Windermere branch for 23 years, and on the day in question left Kendal station at 2.28 p.m., 43 minutes late. He inquired before leaving Kendal whether there was anything in front, and was told there was nothing in front. The under-yardsman informed him the goods-train had not started. He ran in the ordinary course until approaching the Burneside distant-signal, which he found was about the position of caution. It ought to stand either at all-right or at danger. For some weeks before the signal had not been working properly. He took it to be off on this occasion. He approached the signal at a speed of 20 or 30 miles an hour. As he passed the level-crossing, a quarter of a mile from the station, he saw some men standing there, who signalled to him to indicate that there was something in the way. He then did his best to pull up, and reduced his speed to six or seven miles an hour before reaching the goods-train. He remained on the engine, and was not hurt. He had not made any complaint of the signal not working properly. He saw the home-signal at danger on passing the level-crossing.

The fireman, *William Schofield,* states that his engine-driver's evidence is quite correct. He, as well as his mate, had seen a goods-train across the road at Kendal, and, not knowing there was an extra goods-train on that day, thought the line was clear to Windermere. The semaphore-arm of the distant-signal was standing more than one-half down when he saw it. He noticed, after the collision, the signal was nearer the position for danger than when he first saw it, but it was not quite up even then. He did not know that anything was in the way until he reached the level-crossing, a quarter of a mile from the station. He then applied his break while his mate reversed the engine. He saw the home-signal at danger when he passed the distant-signal.

James Wills, the guard, was riding in the last vehicle but one of the train. It was a break-carriage. He saw the distant-signal as he approached Burneside, and noticed that it was at the position of caution. He took it to be an all-right signal. He had passed the signal and was near the level-crossing, half-way between the signal and the station, when he applied his break, on hearing a whistle for it. He did not see the home-signal.

The goods train in question consisted of a tank-engine and eight waggons with a break-van.

The engine-driver, *Francis Thompson,* says he left Kendal at 2.25 p.m. and reached Burneside at 2.30 p.m. He left four waggons and the break-van on the down-line at that station while he ran forward with the remainder of his train to put two waggons in the siding. He left the two waggons in the siding and drew forward again, and was backing to the remainder of his train on the down-line when he saw the passenger-train was approaching. He stopped his engine and saw the collision occur. The waggons which he had left were only moved forward about a waggon length by the force of the collision. The van at the tail of the goods train was knocked off the rails, as well as one carriage of the passenger-train. He did not see the distant-signal. He saw the passenger-

train coming when it was 150 yards from him, and thinking it was going too fast, especially with the slippery state of the rails, and as the snow was above the level of the rails, he opened his whistle to warn the passenger-train driver.

The fireman, *John Hayes*, has nothing to add to the statement of the engine-driver.

Edward Eccles, the breaksman, uncoupled four waggons and a van from the rear part of the goods train at Burneside as soon as it came to a stand, and sent the leading part into the siding to leave two waggons. He was standing in the "6-foot" space when he saw the passenger-train approaching. He saw the station-master turn the lever of the distant-signal to the position of danger after he reached the station, and before he began to shunt his train, but he could not see the signal-post and does not know whether the signal-arm was at danger or not.

The station-master at Burneside, *Thomas Goodwin*, has been at this station for about seven months, and was for four years a signalman. He saw the goods-train arrive about 2.30 p.m., and he turned all his signals to danger in both directions, intending to shunt the goods-train from the down to the up line to allow the passenger-train to pass it. The passenger-train usually precedes the goods-train; but on this particular day the passenger-train was late and followed the goods-train. It has never done so before or since. The breaksman had unhooked four waggons and a van from the remainder in order to put two waggons into the siding before he reached the spot. He therefore turned the leading part of the train across towards the siding, and shortly afterwards he saw the passenger-train coming. He waved the goods-driver back to join the waggons left on the down-line, but before he could get back to them the collision occurred. He did not see whether the semaphore-arm of the distant-signal went up to danger, because it is not visible from the place from which it is worked. The fireman of the passenger-engine stated to him after the collision that the signal was off, and he drew the fireman towards the place from which the signal could be seen and showed him that although the arm was drooping a little it was nearly in the position of danger.

Richard Wilson, the gate-keeper at the level-crossing a quarter of a mile on the Kendal side of the station, and foreman-platelayer of the length, saw the goods-train pass him, but does not know at what time. He saw the passenger-train pass about five minutes afterwards; it was going at a good speed. The distant-signal was not as it ought to have been; it drooped a little. Before the accident the signal used to go up right, but would not pull in right. After the collision he touched the wire with his foot, and it moved the arm up a little. The snow did not prevent the signal from working; the wires were clear of snow as well as the arms and glasses. He had been cleaning the snow off the wires, and the snow had not fallen for two hours. Nobody had complained to him about the signal before the collision, or he would have set it right. The signal was sufficiently up to indicate danger before the collision, but it was not up as much as it ought to have been, or he would not have kicked the wire to send it up.

Conclusion.

There appears thus to be no doubt that the distant-signal, which was the only signal of warning between the engine-driver of the passenger-train and the shunting goods-train, was not working as well as it ought to have done, and its semaphore-arm was not in the position of danger. According to his instructions, however, this engine-driver, when he found the arm, as it appears to have been, in a doubtful position, ought to have treated it as a danger-signal, and to have exercised more caution in approaching the station. It would seem from this man's evidence that he expected, not knowing the goods-train was in front of him, to find the line clear, and that he may, perhaps, have observed less caution on that account. I learn that it is proposed to improve the signal-arrangements at this station, by bringing the levers together, and thus facilitating their working. As soon as other work of a similar description can be completed in more important places, a signal-cabin should be built, and the signals and points interlocked, and other modern improvements introduced. Meanwhile, the present distant-signal should be removed to a position from which it can be better seen, further from the station. The line is at present worked on the old time-system, but when the block-system shall be happily introduced, then it will be necessary to block back before shunting operations are performed. It would have been better, considering the mode in which this line with its comparatively small traffic is worked, if the engine-driver had been warned at Kendal of the goods-train being exceptionally sent in front of him.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

H. W. Tyler.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
13, *Downing Street*, 13*th January* 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 1st instant, the result of my inquiry into the circumstances connected with the collision that occurred on the 27th December last, close to the south end of Primrose Hill tunnel, on the London and North-Western Railway, from a passenger train passing from the up main line into the goods yard, and there coming into contact with an approaching shunting engine.

Twelve passengers have complained of having been injured on this occasion, but the injuries received are believed to be of a slight nature, and the Company also returns a fireman as slightly hurt.

Very little damage was done to the rolling stock.

The west end of the goods yard, adjacent to Chalk Farm and Camden Town stations, is entered by means of a pair of facing points placed about 15 yards outside of the south end of Primrose Hill tunnel; and the signal box from which these facing points and other points are worked in connexion with the signals, is 85 yards south of the tunnel mouth. The signalman in this box also works an up distant signal, placed at the north end of the Primrose Hill tunnel, which is about 1,160 yards in length, and an up home signal on a three arm signal post near his box. The traffic through the tunnel is worked on the absolute block system, and there are four lines of rails through this tunnel,—two for down trains, and two for up trains,—the up and down lines being placed close to each other, the tunnel having only been constructed originally for two lines of railway.

The traffic from the south end of the Primrose Hill tunnel to the Chalk Farm and Camden Town stations, which are nearly abreast of each other, being controlled by signals worked from signal boxes No. 1, 2, and 3. Signal box No. 1 is about 185 yards south of

the south end of Chalk Farm station, up platform. No. 3 is near the south end of Primrose Hill tunnel, and No. 2 is intermediate between Nos. 1 and 3, and distant 480 yards from No. 3. The arrangements for controlling the up passenger traffic are provided for by making the up home signal for No. 3 signal box act as the up distant signal for No. 2 signal box; and it is slotted, so that the up home signal at No. 3 cannot be taken off for an up passenger train until No. 2 has taken off the slot: similarly the up home signal at No. 2 becomes the up distant signal for No. 1, and No. 2 up home signal cannot be taken off for an up passenger train until No. 1 has taken off the slot at No. 2.

"Line clear" is not obtained for an up passenger train at No. 3 signal box from No. 2 signal box, until after the signalman at No. 1 signal box has telegraphed "Line clear" to No. 2 signal box.

In consequence of these arrangements, the practice of signalling drivers past No. 3 signal box at the south end of the tunnel, when the up home signal stands at danger, by means of hand signals, *i.e.* green flags or green lights, has been introduced and sanctioned; and up trains frequently pass over the facing points leading into the goods yard, without the security which is obtained by the up home signal being lowered, and without any certainty that the facing points are rightly set for the up main line, as they may stand open for entering the goods yard.

The evidence of the Company's servants is as follows:—

Charles Tallon, engine-driver over 7 years in the service of the London and North-Western Railway Company, states "that he was driving the engine of "the 9.10 a.m. train from Aylesbury to London on "the 27th December: that he had a tender engine "and 11 vehicles, and that he was pulled up at the "north end of the Primrose Hill tunnel, and had "nearly stopped: that he found the distant signal at "the north end of the tunnel was on at 'danger,' "and the signalman in the box at the north end of "the tunnel showed a green flag to go on, and "said 'Good morning,' and he passed on: that he "shut off the steam before he got half way through "the tunnel, which was very full of smoke and steam, "so that he could not see the home signal at all, "even when he got out of the tunnel, and he passed "the home signal without seeing it, when he was "running about eight miles an hour: that he found "he was going in the wrong direction when he got "out of the tunnel, but he could not see the signal "nor the points: that he has run regularly over this "part of the line three or four times a day: that they "can generally see the up home signal when half "way through the tunnel: that there was hardly "time to do anything before the collision took place "with a shunting engine which was travelling to-"wards him: that the buffer plank of his engine, "and the angle irons of the framing of the engine, "were broken, and the right-hand buffer casting of "the tender was also broken: that no carriages in "his train were thrown off the line, nor damaged: "that the buffers and buffer casting of the shunting "engine were broken, but it was not thrown off the "rails: that he does not know how far it was from "the mouth of the tunnel that the collision took "place: that he did not get any warning whatever "from the signalman at the north end of the tunnel, "as required by the instructions dated 20th May "1873: that he has been told before, that he must be "prepared to stop at the south end of the tunnel, "and since that he found the distant and home "signals worked from the box at the north end of "the tunnel on at 'danger' against him, and in con-"sequence he pulled up his train, and had almost "stopped, when he was signalled forward by green "flag: that when he found the distant signal at the "north end of the tunnel on at 'danger' against "him, he understood that at that time the up home "signal at the south end of the tunnel was on at "'danger': that he was called forward by green flag "at the north end of the tunnel, and has been called "forward by green flag at the south end of the "tunnel, when the up home signal there has stood at "'danger': that he did not know exactly, on ac-"count of the steam and smoke, where he was in the "tunnel, and that was the reason why he was not "prepared to stop at the home signal."

Jonas Bailey, signalman at the box at the north end of Primrose Hill tunnel for 30 years, states "that "he came on duty at 6 a.m. on the 27th December: "that the Oxford Road up goods train, due about "6.20 a.m. was very late, and was kept waiting for "the up Birmingham express passenger train to pass, "and that train passed his box at 10.25 a.m.: that "he got 'line clear' from the south end of the tun-"nel about 10.28 a.m., and after that he rang the "bell to the south end of the tunnel box, and sig-"nalled a goods train on by the indicating instrument, "and pinned the needle over to 'goods': that he then "gave 'train on line' on another instrument, show-"ing that the goods train was passing through the "tunnel, and the signalman at the south end of the "tunnel pinned the single needle over: that while "the goods train was passing through the tunnel, he "received a 'be ready' signal from Kilburn, for a "passenger train, and he passed the 'be ready' signal "by four strokes of the bell to the signalman at the "south end, before the signalman at the south end "gave 'line clear' for the up goods train, by so many "strokes of the bell (four): that the goods train was "about six or seven minutes passing through the "tunnel, and after the signalman had signalled it out "he rang the bell, and gave the passenger train "'train on line ordinary,' on the indicating instru-"ment: that the passenger train (the Aylesbury "train) arrived before he got 'line clear' for the "goods, and just as he received it: that the passenger "train driver found his signals on at 'danger' "against him, and also the distant signal worked "from the south end of the tunnel; but he showed "the driver of the Aylesbury train a green flag, and "told him to go 'steady through,' and he also told the "guard in the break-van of the passenger train that the "'Oxford goods' had just gone through: that the "passenger train went through about 10.29 (probably "10.39), and he got 'line clear' for that train, but not "so quickly as usual: that there was no one in the "signal box when the passenger train passed into "the tunnel: that he does not recollect saying 'Good "morning' to the driver of the passenger train: that "the Aylesbury train would be between Willesden "and Kilburn when he gave the 'be ready' signal "for it on to the south end of the tunnel: that it is "the practice, when the up distant signal worked "from the south end of the tunnel is on at 'danger,' "to stop a passenger train, and tell the driver to go "'steady through' the tunnel, and stop at the south "end: that the Aylesbury train stopped dead be-"tween his up home signal and his signal box about "a minute:"

Henry Cross, fireman of the 9.10 a.m. train from Aylesbury on the 27th December, states "that he has "been a fireman four and a half years in the service "of the London and North-Western Railway Com-"pany, and that his train stopped just against the "policeman's box at the north end of Primrose Hill "tunnel, and the policeman said 'Good morning' to "his mate, but he did not say anything else, and did "not tell them to go 'steady through' the tunnel: "that he did not see the signal at the south end of "the Primrose Hill tunnel: that he never saw the "other engine before they struck it, when they were "running six or seven miles an hour: that his mate "jumped off before the collision took place, but he "remained on the engine, and was not hurt."

David Sharp, guard of the 9.10 a.m. train from Aylesbury, about 6 months a guard and 3½ years in

LONDON AND NORTH WESTERN RAILWAY.

CAMDEN.

SCALE 80 FEET TO AN INCH.



the Company's service, states "that his train consisted "of nine vehicles, independent of the engine and "tender (five carriages, two break-vans, and two milk "trucks); that they left Willesden at the proper time, "10.30 a.m., and just stopped at the north end of "Primrose Hill tunnel, and he rode in the last break-"van, which was the last vehicle in the train: that "he did not hear what passed between the driver and "signalman, but his break was on when they stopped, "and, finding the engine pulling, he took it off, and "as he passed the box the signalman said 'Oxford "goods in front': that the up distant signal at north "end of the tunnel was not taken off for them: that "the tunnel was very full of steam and smoke, and "he did not see the up home signal at the south end "of the tunnel, but he felt the shock of the collision "before his van got out of the tunnel, and they were "running, as near as he could say, at from seven to "nine miles an hour: that the collision occurred "about 10.43 a.m.: that none of the vehicles in his "train were knocked off the rails, but the head of "one of the milk trucks was damaged: that his break "was not on at the time: that there was no whistle "from the driver before the collision occurred: that "one gentleman was rendered partly insensible, and "had to be assisted out of the first-class carriage in "which he was riding."

Charles Andrews, signalman at the south end of Primrose Hill tunnel for 30 years, states "that he "came on duty at 6 a.m. on the 27th December: that "about 10.35 an up goods train entered the Primrose "Hill tunnel at the north end, and after it had arrived "at the south end, and he had given 'line clear' for "that goods train back to the north end of the tunnel, "the signalman at the north end signalled to him "what he imagined was a light engine, but which "turned out to be a passenger train: that he believes "the signalman gave him four beats on the needle "instrument, which would indicate a light engine: "that at the time he had another light engine coming "down the down goods line, going towards Willesden: "that he allowed that engine to cross the up main "line, while what he believed was another light "engine was entering the tunnel at the north end: "that the up distant and up home signals were both "on at 'danger,' while the supposed up light engine was "entering the tunnel: that he believed he received "from the signalman at the north end of the tunnel "four beats of the needle instrument, which indicates "that an up light engine was on its way, and if he "had known that an up passenger train was ap-"proaching he would not have allowed the down "light engine to proceed: that the up distant and up "home signals were on at 'danger,' because he had not "received 'line clear' from No. 2 box for a previous "passenger train, and he does not know when he "received 'line clear' from No. 2. box for that train, "(the up Birmingham express train,) and he does not "know at what time that express train passed his "box: that he gave 'line clear' back to the north "end of the tunnel for the up goods train, and it was "after that that he got the signal for what he thought "was the light engine from the north end of the "tunnel: that before he allowed the down light "engine to proceed he had to close the catch point "by moving lever No. 16, and the points at the end "of the down goods line by lever No. 25, and also the "up facing points by moving lever No. 23; No. 23 locks "No. 25, and he lowered the down goods line signal to "the down main line for the down light engine to "proceed: that after the down light engine had gone "on he put up the down signal to danger, but forgot "to shift the facing points on the up main line, which "remained standing open to the goods yard: that "immediately after the down light engine had got "into the tunnel a shunting engine approached his "box out of the down local line for the purpose of "getting behind a train which was on the up goods "line, to shunt it: that he called it down by hand "flag, forgetting that he had not closed the facing "points on the up main line, and the passenger train "engine came in contact with the shunting engine at "No. 18 points: that he thinks the passenger train "was running not less than eight miles an hour; and "the collision occurred about 10.45 a.m.

From the preceding statements and an examination of the locality it appears that up traffic through the Primrose Hill tunnel is rendered specially dangerous by the facts therein mentioned which were supported by other testimony: first, that when the tunnel is full of steam and smoke, a driver is unable to see the up home signal at the south end of the tunnel, and that he cannot tell whereabouts he is in the tunnel, so as to enable him to regulate his speed and pull up his train at the up home signal when it is on at 'danger' against him: second, that as the management has authorised the calling on of up trains from the south end of the tunnel by the use of green flags and green lights, instead of by lowering the up home signal, when the line is clear to the next signal box, No. 2, the security and safety which is obtained by the certainty that the facing points must be set right for the running line before the signal for that line can be lowered, is altogether lost, and a signalman may under such a system commit the mistake which was committed by the signalman in No. 3 signal box at the south end of the Primrose Hill on the 27th December, which caused this collision to take place, of allowing the facing points on the up line to stand open for the goods yard, when an up passenger train intended for Chalk Farm and Euston station running on the up main line is approaching them from the Primrose tunnel, and, as I have before said, from the tunnel being sometimes full of steam and smoke, the driver can neither see the signal nor the facing points.

It was stated that this was the first time during a service of 30 years that this signalman had made such a mistake, and had thus caused the collision to take place. It could not have occurred except that the officers of the Company had permitted the use of hand signals to supersede the regular out-of-door signals at a very dangerous point, viz. the south end of the Primrose Hill tunnel.

It will also be noticed that there is a discrepancy in the statements of the driver of the passenger train and of the signalman at the north end of the tunnel as to the driver having been cautioned, but I see no reason to doubt the signalman's statement.

I understand that efforts have been made to exhibit a gas light in the tunnel to warn drivers of their exact position when they have reached a certain point, but that the rapid currents of air caused by trains passing in opposite directions have extinguished the gas light.

I think this difficulty might be got over by causing a supply of air to be conveyed through tubing to a glass gas lamp hermetically sealed with another tube above to carry off the products of combustion; and this gas lamp should be placed from 100 to 150 yards from the south end of the tunnel, and should not only serve to indicate the position, but convey distinct information to the driver of an up train that the up home signal is on or off.

To get rid of the other danger to which I have drawn attention, the slotting of the signals from No. 1 to No. 2 and No. 3 box should be got rid of to allow the up home-signals to be lowered when a train is to proceed, and thus secure that the facing points are set right for up trains proceeding to the goods yard or along the up main line, substituting up distant-signals worked from No. 1 and No. 2 signal boxes to tell up train drivers that the up home-signals at these boxes are either on or off.

One other point requires to be noticed. It should not be possible to close the catch point on the down goods line by moving No. 16 lever until the facing points on the up line are set right or open for the goods yard,—as at the present time, as the work is now carried on, and by using hand-signals for down goods trains, it would be practicable to have a collision between

an up and a down train at the crossing of the up main line by the down goods line.

I enclose copies of the regulations under which the traffic is worked.

I have, &c.
W. YOLLAND,
Colonel.

The Secretary,
Railway Department,
Board of Trade.

LONDON AND NORTH-WESTERN RAILWAY.

EXTRACT from Instructions for working the Train Signal Telegraph between the north end of Primrose Hill tunnel and No. 1 box at the Canal Bridge. Dated November 1871.

Up Trains.

As soon as the north end of the tunnel receives notice of a train passing Kilburn, he (the north end) must forward the "Be ready" signal (four beats on the bell) to the south end; south end to acknowledge by repetition.

Upon the close approach of the train to the north end the signalman is to proceed as follows:—

Ring once to call attention at the south end.

If the train is for Euston, block the needle or needles of the indicating instrument to "Ordinary," "Special," "Empties," "Kensington," "Mail," or Express," as the case may be.

Keep the needles blocked until "Line clear" is signalled from the south end.

(If the train is for Camden, use the indicating instrument for Camden trains in a similar manner.)

Give "Train on line" on the up line signal needle instrument. The south end to acknowledge by blocking the needle over to "Train on line," keeping it so until the train has passed No. 2 box (engine crossing).

As soon as the south end receives the signals from the north end, he is to repeat them on the indicating instrument in connection with the Canal Bridge (No. 1 box), and must keep the needle or needles blocked until "Line clear" is signalled from No. 2 box.

He must also ring once to call attention at No. 2 box (engine crossing), and give "Train on line" on the up line instrument. No. 2 box to acknowledge by blocking the needle over to "Train on line," and keeping it so until the train has passed him, when he is to ring once to call attention at south end, and unblock the needle, and point it to "Line clear." This the south end must acknowledge by repeating, and the needle will then be left vertical.

When "Line clear" is signalled from No. 2 box the south end must ring once to call the attention of the north end, and unblock the needle, and point it to "Line clear." This the north end must acknowledge by repeating, and the needle will then be left vertical.

On receipt of this signal the north end will unblock the needles of the indicating instrument, and allow them to become vertical, ready for signalling following trains:—

As soon as No. 2 box (engine crossing) receives the signal "Train on line" from south end, he must transmit it to the Canal Bridge. Ring once to call attention, and give "Train on line" on the up line instrument. Canal Bridge to acknowledge by blocking the needle over to "Train on line," and keeping it so until the train has passed him, when he is to ring once to call attention to No. 2 box, and unblock the needle and point it to "Line clear;" this No. 2 box must acknowledge by repeating, and the needle will then be left vertical.

CIRCULAR TO ENGINEMEN, GUARDS, BREAKSMEN, AND OTHERS.

Alteration of Signal.

Commencing on Tuesday morning next, September 17th, the present ground disc signal in the Primrose Hill Tunnel, between the up and down main lines, at about 500 yards distance from the south end of the tunnel, will be removed, and in lieu of it a semaphore signal will be used.

This new semaphore is outside the north end of the tunnel, between the tunnel and the first overbridge in the direction of Kilburn.

The signal will work to danger and caution only, and is to be considered the distant signal from No. 3 signal box at the south end of the tunnel.

When at danger, drivers must be prepared to stop at the south end of the tunnel, before reaching the points leading into the goods yard.

When the signal is at caution, it will denote that the line is clear at the south end of the tunnel.

H. P. BRUYERES.

District Superintendent's Office,
Euston Station, 16th September, 1872.

Euston Station, 29th May, 1873.

Up-Train Signalling through Primrose Tunnel.

The order for Kilburn to keep the danger signals on when the distant signals from the tunnel stand at "Danger" is cancelled.

Kilburn will only keep the danger signals on when "Train on line" to tunnel, or blocked back from tunnel by telegraph.

Up Passenger Trains.

On an up passenger train entering the tunnel at north end, the signalman thereat will not keep "Train on line" to Kilburn, until the train has cleared the tunnel at south end, but keep on his main and distant signals until the signalman at the south end takes off his distant signals through the tunnel.

The signalman at south end will give "Line clear" to north end as soon as a passenger train has passed out clear of the tunnel, but will not take off his distant signal through the tunnel until No. 2 cabin has given "Line clear."

No. 2 cabin not to give "Line clear" to south end of tunnel until No. 1 cabin at Canal Bridge gives "Line clear."

So long as the distant signal through the tunnel is on from the south cabin, the signalman at the north cabin will keep on his up main and distant signals, and stop engines or trains, to warn the drivers that the tunnel is clear, but not south of tunnel.

Up Goods.

On the signalman at north end of tunnel telegraphing to the man at south cabin "Goods waiting," the man at south cabin (provided the goods sidings be clear) will take off his distant signal through the tunnel, and telegraph north cabin "Line clear for goods."

The man at the north cabin will then pass the goods train into the tunnel, telegraphing "Train on line," as now; and the man at south cabin, before telegraphing back "Line clear," on the goods train clearing the tunnel will replace his distant signal through the tunnel to danger, provided he has not received "Line clear" from No. 2 cabin for passenger train.

No train to be turned from third line at north end of the tunnel until the main line has been blocked and protected by signals at Kilburn station.

H. P. BRUYERES.

CIRCULAR TO SIGNALMEN, ENGINE DRIVERS, GUARDS, &c.

Signalling of Trains on Main Lines between south end of Primrose Hill tunnel and No. 1 box Canal Bridge.

On and after Monday next, the 22nd inst., the following arrangement for signalling the above will come into operation.

Down Trains.

The down arm on the signal post (up side) north of Chalk Farm over-bridge is now used as a main signal for No. 2 box (engine crossing), and also as a down distant signal for No. 3 box at south end of the tunnel.

In future, when this signal is at danger, the down distant signal from No. 2 box (engine crossing) at south end of up platform at Chalk Farm will also be at danger.

Up Trains.

The up arm in the signal post north side of Chalk Farm Bridge is now used as a main signal for No. 2 box (engine crossing), and also as an up distant from No. 1 box (Canal Bridge).

In future when this signal is at danger, the up distant signal (from No. 2 box) at south end of tunnel (which is also a main signal for No. 3 box) will also be at danger. Drivers of up and down main line trains to pass the signals at south end of tunnel and engine crossing, if signalled to do so by hand lamp or flag.

Before any obstruction of the main lines is allowed to take place at the "engine crossing (No. 2 box)," the signalman there must block back by six beats on the bell according to printed instructions, dated November 1871, to No. 1 (Canal Bridge) box, and to No. 3 (south end of tunnel) box. The signalman in No. 1 will in such case keep on his down distant signal, and the signalman at No. 3 must keep on his up main and distant signals until the block has been taken off from No. 2 box.

Before crossing trains from Camden goods yard to down main or 4th lines at south end of Primrose Hill tunnel, the signalman there (No. 3 box) will block back by six beats on the bell according to printed instructions, dated November 1871, to No. 2 box, who must keep on his down distant and main signals until No. 3 box has taken off the block.

J. L. VAUGHAN.

District Superintendent's Office,
February 17th, 1875.

Printed copies of the above report were sent to the Company on the 6th February 1877.

LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.

Board of Trade,
(Railway Department,)

SIR, 13, *Downing Street, 22nd January* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 23rd ultimo, the result of my inquiry into the circumstances which attended the accident that occurred on the 10th December last, at Norwood junction, on the London, Brighton, and South Coast Railway, from a shunting engine while off the rails breaking down the two cast-iron girders of an under bridge, and falling into the road below. The driver of the engine had his arm fractured.

A short distance to the north of the passenger platform at Norwood junction seven lines of railway have been carried over the Portland Road by under bridges constructed of cast-iron girders.

These lines of railway have been laid down for a large number of years, probably nearly amounting to 20: but about four years since, in consequence of alterations at the junction station, the line of rails, across the second of these bridges reckoned from the west, was taken up, but the two cast-iron girders which supported the transverse bearers on which the chairs for the rails were fixed and the wooden planking between them, were allowed to remain.

The rails at the south side of this bridge were also removed for a distance of about 20 feet southwards from the bridge, and the line from the station which is straight thus constituted a species of blind siding, without having any buffer stops or the end of the rails turned up, to prevent any engine from running off the rails, along the ballast, and on to the platform between the cast-iron girders of the under bridge, in the event of an engine-driver making any mistake and continuing to run on this siding.

About 49 yards north of the north end of the main line platform there are a set of three-throw facing-points, with one pair and a line to the left leading to the local up line, a second pair for the straight line to the blind siding before referred to, and a third pair with a line to the right leading out on to the main up line; and working with the facing-points at the ends of the lines to the left and right there are ground disc signals, to indicate to a driver when those points have been set right for a train to proceed on either of those lines: but no signal is attached to the points for the straight road leading to the blind siding as no engine or train was intended to travel on that line.

The evidence of the company's servants who were concerned in this accident is as follows:

David Miles, engine-driver three years and 9½ years fireman in the service of the London, Brighton, and South Coast Railway, states: "That he was in "charge of the shunting engine on the morning "of the day on which the accident occurred, and "had nearly completed his work: that he had passed "from the goods yard siding on to the local up line, "and then reversed his engine to go back to the "Pimlico siding on which there were between 20 and "30 trucks standing, and he had to hook on about "17 trucks to draw them ahead, and to take them on "to the local up line: that his engine stood level "with the north end of the main line platform, on "his right hand: that as soon as he had had the "engine hooked on to the trucks he received a hand-"signal from the foreman over the shunters, which "he thought at the time was intended for him, and "he then put steam on the engine with the intention "of pulling the trucks out: that as he expected to "receive another signal from the same man he kept "his attention fixed on him longer than he should "have done, and thus omitted to see that the disc "signals at the three-throw points stood at danger "against him: that after he had passed the dummies "(disc-signals) he found that he was running on the "wrong road, leading to the blind siding, and he "shut off the steam, reversed the engine, and had the "break applied so as to bring the engine to a stand-"still as soon as he could: that he might have been "running at three or four miles an hour when he got "on to the bridge after running over the sleepers "at the end of the rails on which his engine had "been running: that as he got on to the bridge he "found the girders of the bridge give way, and the "engine fell into the road below, and he and his "mate went down with it: that his arm was fractured

" but his mate escaped without any injury: that this " happened about 10 or 12 minutes before 8 o'clock " in the morning."

Edward Power, fireman to David Miles, fireman for two years, confirmed the driver's statement and said: " That at the time he was occupied in putting " coal on the fire of the engine."

W. G. Reid, goods foreman, between eight and nine years in the service of the company, states: " That " the shunting engine No. 228 was in the goods yard " siding and thence went into the Pimlico up siding, " and after the shunting engine got into the siding, " he informed the signalman in the north signal-box " that he was to allow the portion of the goods train " on the main up line to go away on the local up line: " that a South-eastern goods train was waiting behind " on the same line of rails, and in the meantime he " went and told the driver of the Portsmouth up " goods, which was standing on the up main line, " that he was to go forward on the up local line, and " after this he went to the luggage box of the same " train, and after the luggage work was done he gave " the signal right away: that he thinks the engine of " the Portsmouth train stood rather ahead of the " shunting engine: that the signal he gave to the " driver of the Portsmouth engine was by holding " out his arm horizontally: that he thinks both " drivers started together, but the driver of the " Portsmouth engine stopped when he saw what had " happened to the shunting engine. He did not see " both engines start."

From the preceding statements it will be seen that the driver of the shunting engine mistook the signal given by a foreman of the goods department intended for a train standing on the up main line, for one intended for himself, and had omitted to look to the disc signals opposite to the facing-points, which should have governed his movements; and, as the company had omitted to put up any stop blocks at the end of the blind siding to prevent any engine from running off the rails, the driver was unable to stop his engine after running a few yards on the ballast, passing over some old sleepers which had been laid transversely across the ends of the rails and thence on to the platform of the under bridge, and breaking down both girders and falling with them into the road below.

Fortunately no person was in the road where the engine fell.

The shunting engine No. 228, which broke down the girders, was a six-wheeled coupled tank engine, having a wheel base of 14½ feet, and for which the weights are returned as follows:—

	Tons.	Cwts.
On the leading wheels -	13	9
„ driving „ -	15	2
„ trailing „ -	11	0
Total - -	39	11

The span of this bridge is 26 feet 9 inches. I enclose a plan showing the details of the girders, which the company's engineer, Mr. Banister, has been good enough to prepare at my request. The transverse rail bearers were not broken.

One of the two girders was broken at the centre only, the other was fractured in two places.

I enclose Mr. Banister's calculation of the strength of the girders that broke, and also that of the rolling load on the two girders. Both slightly differ from my calculation.

The requirements of the Board of Trade as to the strength of cast-iron girders for bridges is that the breaking weight at the centre should be not less than three times the permanent load due to the weight of the super-structure, added to six times the greatest moving load that can be brought upon it, and the following are the results, when applied to the girders of this under bridge, with the weights supplied by the shunting engine No. 228.

According to my calculation—

	Tons.	Tons.
Thus, permanent load -	3 × 4·4	=13·2
„ rolling load -	6 × 13·22	=79·32
Total - - -		92·52
While I make the calculated breaking weight - - - -		Tons. 65·6
Deficiency - -		26·92

According to Mr. Banister's calculation—

	Tons.	Tons.
Thus, permanent load -	3 × 4·4	=13·2
„ rolling load -	6 × 12·8	=76·8
Total - - -		90·0
Mr. Banister makes the calculated breaking weight - - -		70·0
Deficiency - - -		20·0

So that it is apparent that the girders are not sufficiently strong for this class of engine, and I call attention to the fact, as Mr. Banister states that the same construction of girder prevails throughout.

It is quite possible that the girders were both broken by the impact caused by the wheels running over an uneven surface of cross beams and rail bearers, but in my opinion it will be desirable to substitute stronger girders for these now laid down, or to make use of lighter engines for doing the shunting.

I have, &c.,
W. YOLLAND,
Colonel.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 25th January 1877.

LONDON, BRIGHTON, AND SOUTH-COAST RAILWAY.

Board of Trade,
(Railway Department,)
13, Downing Street, 16th January 1877.

SIR,

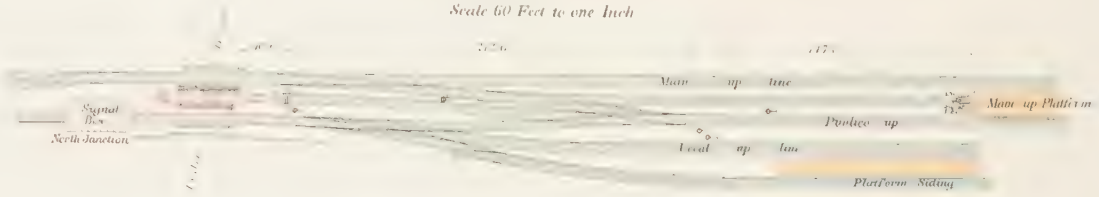
IN compliance with the instructions contained in your minute of the 9th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 23rd December last at the Victoria station on the London, Brighton, and South-Coast Railway.

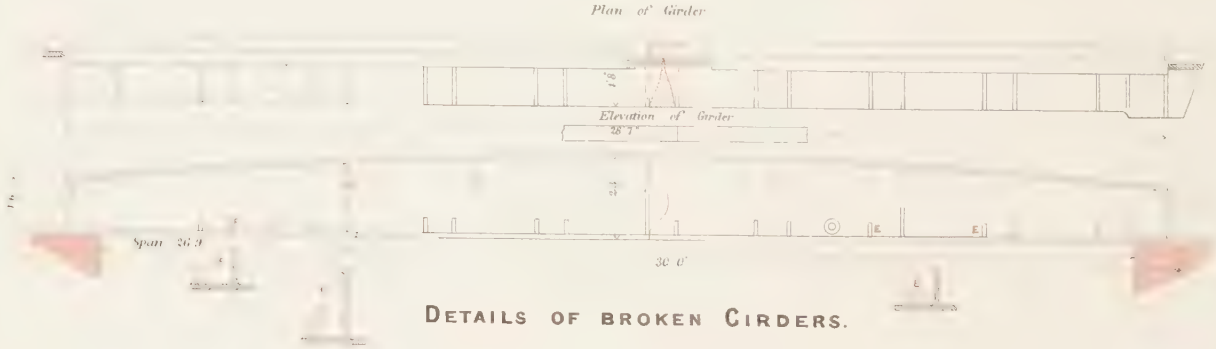
In this case, the 5.33 p.m. passenger-train from London-Bridge viâ the Crystal-Palace for the Victoria station came into collision, in entering No. 2 platform-line at the Victoria station, with an engine which was standing at the starting-signal of that platform-line, waiting to proceed to the locomotive-sheds at Battersea. The buffer-beams of both engines were broken, and the buffers were displaced, but no other damage was done to the rolling stock, nor was any vehicle thrown off the rails.

To accompany Colonel Yelland's Report of the 23rd January 1872

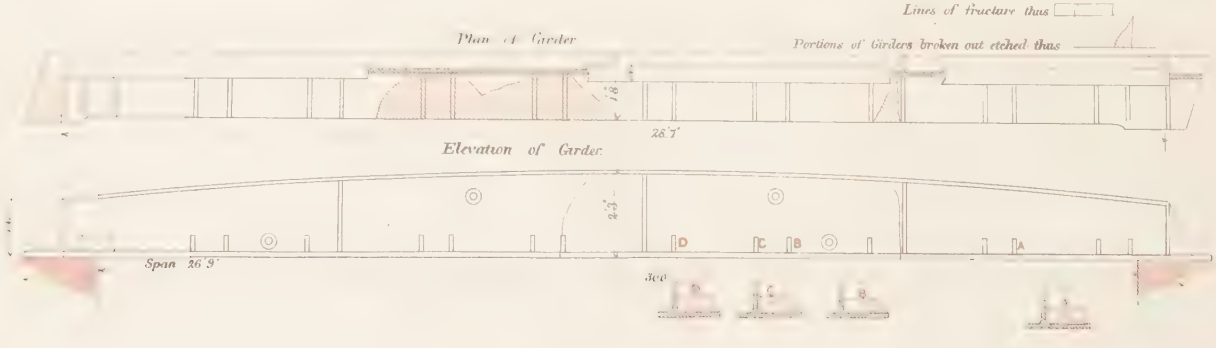
General Plan of a Portion of Norwood Junction Station.

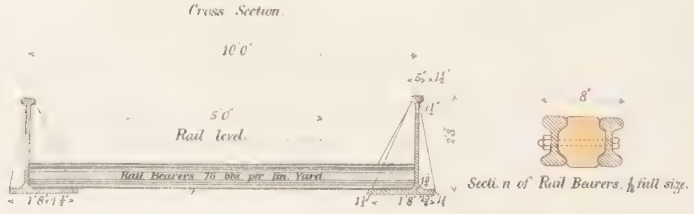
Scale 60 Feet to one Inch





Details of broken Girders.





½ of an Inch Scale

Cross Section through Girders shewing Rail Bearers

Surface of Road

Three passengers have complained of injury.

Description.

The entrance to and exit from the Victoria station are controlled by two signalmen in a signal-cabin called the Eccleston-Bridge signal-cabin. There are seven platform-lines and three spare-lines in the station, and there are starting-signals at the ends of the platforms applying to the various platform-lines. The starting-signal applying to No. 2 platform-line, to which it is necessary in this report particularly to refer, is about 30 yards from the signal-cabin. An engine-driver in entering a platform-line expects to find that line clear for him unless he has received from the Eccleston-Bridge cabin, or from the Victoria-junction cabin, about 150 yards in advance of it, a caution-signal to indicate to him that there is something standing on the platform-line.

The 5.33 p.m. passenger-train from London-Bridge was composed on the day in question of a tank-engine and 10 carriages, of which two, one at each end of the train, were break-carriages.

Evidence.

The engine-driver, *George Preston*, left London-Bridge at 5.36 p.m., three minutes late, and, after being somewhat delayed on the journey, approached the Eccleston-Bridge signal-cabin at the Victoria station at about 6.42, 13 minutes late. He stood for a minute after passing Grosvenor-Bridge, on the bank, until the stop-signal was lowered. He then proceeded forward towards the station, and the signals from the Eccleston-Bridge cabin were lowered for him to pass into the station as well as the signal of Victoria-junction cabin. He saw by the index-light exhibited that he was to run into No. 2 platform. The entrance to the station was so full of steam that he could see nothing as he passed the Eccleston-Bridge cabin. He was looking for a caution-light from the signal-cabin, and at the same moment he saw an engine standing at the starting-signal of No. 2 platform-line. He told his mate to stop, and reversed the engine, and then came into collision with the standing engine at a speed of about three miles an hour. He could not reach his whistle, but he halloed to the driver of the standing engine to move out of the way. He applied the steam-break of his engine. He looked for a caution-signal from the cabin, because the night was so very bad, and the entrance to the station was so much filled with steam and he thought that there might be another train standing on the platform-line to which he was going.

The fireman with the last witness, *C. Wright*, confirms the statement of his engine-driver in every particular, and has nothing to add to it.

The guard, *James Thorne*, was riding in the front break-carriage next behind the engine. He had applied his break in coming down the bank, and it was still on in passing the Victoria-junction cabin and the Eccleston-Bridge cabin. He saw that the signals were lowered for them to pass the Victoria junction, but he could not see them from Eccleston-Bridge for steam which rendered the atmosphere so thick. He saw the engine standing at the starting-signal of No. 2 platform-line just as they passed the arch of the Eccleston-Bridge. His break was already applied, and he had time to give it half a turn more before the collision.

The engine-driver of the light-engine with which the passenger-train thus came into collision, *John Taylor*, states that he arrived at the Victoria station about a quarter of an hour before the collision, with the 5.15 p.m. train from London-Bridge, due at Victoria at 6.8. He ran into No 2 platform-line in due course in front of his train. As soon as the train had been emptied and reloaded it started away again with a fresh engine, and he followed it out, but he cannot say exactly at what time. The starting-signal having been turned to danger as the train went out, he remained standing at it, waiting for it to be lowered for his engine to pass out to go to Battersea. He believes he was standing there seven or eight minutes before he saw a train coming on the same line. He could see it for about 10 yards before the engine struck his engine. He stepped off his engine on to the platform and thus avoided the shock. His mate had taken off the break, and his engine was driven back 10 or 15 yards. He followed close down behind the passenger-train to the starting-signal, but he did not give any further notice of his presence to the signalman. It is not his practice to whistle for signals under such circumstances.

James Cogan, fireman to the last witness, states that the evidence of his engine-driver is quite correct. He also stepped off the engine on to the platform, when his mate halloed out to him that there would be a collision.

The signalman on duty at the Eccleston-Bridge cabin, *Jacob Jackson*, saw the 5.15 p.m. train from London-Bridge enter the station at 6.25 or 6.26 p.m., and he let it out again at 6.32, but there was too much steam and smoke about his cabin to enable him to see the engine following that train out of the No. 2 platform-line. He knew that the engine would have to follow the train out, but was unable to see it, and he had no intimation by whistle or otherwise of its being there. It was not foggy at the time. It was only the atmosphere being thick with steam and smoke, and very damp, so that the steam hung about and was not dissipated. The traffic was very irregular and very constant on that evening, which was the Saturday evening before Christmas Day. He received at 6.38 notice of the approach of the 5.33 p.m. passenger-train from London-Bridge, and it was two minutes before he cleared for it. He could not do it sooner because there was shunting going on. He gave clear for it about 6.40. He lowered his signal and exhibited No. 2 on the platform-line indicator, and turned the train into No. 2 line, forgetting entirely that there would be an engine waiting at the starting-signal of that line to go to Battersea. He had not seen that engine waiting at the starting-signal, and he does not think the atmosphere was clear enough during the time it stood there to admit of his seeing it. There were a great many trains at that time, viz., between 6 and 7 p.m. It was worse as regards traffic than any other time of the night.

Conclusion.

This collision has been caused by the forgetfulness of the signalman in the Eccleston-Bridge cabin, who, after letting out one train from No. 2 platform-line at 6.32, forgot that the engine which had brought it into the station would, in following it out on its way to Battersea, be waiting at the starting-signal, and allowed a second train to enter the same platform-line, and to come into collision, about 10 minutes later, with the engine so waiting at the starting-signal.

There is some excuse for this man both in the condition of the atmosphere and in the disorganization of the traffic on the Saturday before Christmas Day. The mistake was not an unlikely one for a man in his position to make, and it is difficult in the present condition of the station to devise any remedy by which such a mistake could be prevented. It is clearly a disadvantageous mode of working, to have, not only engines and trains going in and out one after another on the same line, but also detached engines following the trains out at uncertain intervals, such detached engines being frequently detained for considerable periods in doing so at the starting-signals, in consequence of the paucity of lines at the entrance to the station. For various reasons it will be desirable, as I have mentioned in previous reports, that some enlargement should be effected, and extra accommodation be pro-

vided at the Victoria station, and when improvements of this sort are carried out, it will then no doubt be possible to provide a third road for engines between Nos. 1 and 2, as there is between other platform-lines. There are many disadvantages of working which would be obviated by the enlargement of the station and its approaches, which would, however, involve a heavy outlay, and is a difficult question to deal with.

I have, &c.,

H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 6th February 1877.

LONDON-TILBURY-AND-SOUTHEND RAILWAY.

Board of Trade,
(Railway Department,)
14th December 1876.

Sir,

In compliance with the instructions contained in the Order of the 11th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 6th instant, at the Upper-Abbey-Mills Junction on the London-Tilbury-and-Southend Railway.

In this case the 5.10 p.m. up-passenger-train from North-Woolwich for Fenchurch-Street, viâ Bromley, came into collision with the 4.38 p.m. up-passenger-train from Tilbury for Fenchurch-Street. The collision occurred on the south of the junction, at the fouling point of the two lines. Five of the carriages of the Tilbury train, which were struck by the engine of the North-Woolwich train, were thrown off the rails. The engine and vehicles of the North-Woolwich train remained on the rails, but two of the carriages were buffer-locked. Altogether, 20 passengers have up to the present time complained of injury.

Description.

This junction is about 4¼ miles from the Fenchurch-Street Terminus, and is an ordinary double junction, with a signal-cabin opposite the junction points, and home and distant signals in each direction. The signal-cabin has not yet been fitted with locking-apparatus or improved arrangements, and the signals have not yet been spread, so as to cover the fouling points of conflicting trains. The lamps on the home-signal-posts at the cabin are fixed, with the intention of being visible, the one down the main line towards Tilbury, and the other down the branch to North-Woolwich, but the angle at which the light is directed from the branch-lamp renders the signal afforded by it inefficient; and this forms an important feature in the evidence.

The junction is approached from the branch on a curve of perhaps 15 chains radius, and on a rising gradient of 1 in 280; and from the main-line on a falling gradient of 1 in 100 from a bridge about a quarter of a mile from the junction, and then on a level portion for a few hundred yards to the junction.

Evidence.

The 4.48 passenger-train from Tilbury left that station at 4.49 p.m., one minute late; and consisted of an engine and tender, a break-van, and eight carriages, of which one was a break-carriage.

The engine-driver of that train, *John Benton*, states that in approaching the Upper-Abbey-Mills Junction he found the distant-signal turned to all right, and the home-signal showing a green light. He has never seen a white light at that home-signal. The signals were thus clear for him to run through the junction, and he approached it at a speed of about 15 or 20 miles an hour. He then saw a red hand-lamp exhibited from the cabin, when he was about 250 yards from the cabin. Not knowing what this hand-lamp was for, he shut off steam, and the fireman applied his break. On looking round he saw a train approaching from the branch. The branch-train appeared to be coming very slowly, but almost immediately afterwards the collision occurred. He could only see in approaching the cabin the home-signal applying to the line on which he was running, in addition to the red hand-lamp shown from the cabin. His engine, with the break-van and carriage behind it, ran clear, but the third carriage of his train was struck by the engine of the branch-train. He did not see anything of the branch home-signal-light. It did not occur to him to notice whether it was alight or not.

The fireman of this train, *Thomas Mackness*, confirms the evidence of his engine-driver, and has nothing to add to it. He saw a white light on the distant-signal, and a green light on the home-signal post applying to his line, and he saw a red hand-lamp in the hands of the signalman when he was about 200 yards from the cabin, but he did not see any light applying to the branch. After the collision he went forward with a red hand-lamp to protect the trains.

The guard of this train, *Joseph Hawkes*, was riding in the break-carriage at the tail of the train. As he was passing over the bridge, about a quarter of a mile east of the junction, he saw the train from the Woolwich branch also approaching the junction. He could not tell whether the Woolwich train was going to stop or not, but he saw the signalman put a red hand-lamp out from the cabin, and he at once applied his break. He was about 200 yards from the cabin when he saw the red hand-lamp at the cabin. About two minutes after the collision he ran round his train, and looked at the lamp of the signal-cabin. He saw the lamp of the home-signal applying to the branch showing a red light towards London. The branch lamp was burning well, and showed a good light, but not so good as the lamp of the main-line home-signal. It was directly after the collision that he ran round and noticed this lamp. He found the driver had sent the fireman towards London, and he went towards Tilbury to protect the line.

The North-Woolwich train consisted of a tank-engine, eight carriages, and a break-van. It left North-Woolwich at 5.15 p.m., five minutes late.

The engine-driver, *Benjamin Webster*, states that he found the distant-signal from the Upper-Abbey-Mills signal-cabin with its arm at "danger;" but with no light burning in the lamp. He has never seen that lamp alight. As a rule the lamp at that post is not lighted. He is in the habit of going slowly past it, and looks out for a hand-lamp at the signal-cabin. He passed it on this occasion at a speed of four or five miles an hour, and afterwards saw one green light exhibited from the junction box. He took that light to be a hand-lamp, and he applied his steam to pass through the junction. After that he saw the Tilbury train also approaching the junction. He shut off steam, and reversed the engine, and did what he could to avoid the collision; but his engine struck the third carriage of the Tilbury train while his train was still travelling at a speed of two or three miles an hour. He was looking out nearly all the way round the curve, to see what lights there were at the cabin. He saw only one green light at the cabin, and he took that to be a hand-

lamp, and to mean that it was an "all right" signal for the branch. It was only in consequence of his seeing the Tilbury train, and not in consequence of anything he saw at the cabin, that he tried to stop. After he saw the Tilbury train coming, he saw a red light from the cabin. He was then perhaps fifty yards from the cabin, but he is not sure of the distance. He could then only see one green light while the red hand-lamp was being exhibited. He runs up with that train on that branch every fifth day, and he has done so for 14 days. This was only the second time he had run up with that train after dark. He has run with other Woolwich trains on 60 days during the past 114 days. It was a very dark but clear night. On the two or three previous occasions when he has approached the Upper-Abbey-Mills Junction he has worked by the hand-lamp, and has not noticed any light in the home-signal-lamp.

The fireman of this train, *James Wilkinson*, states that the evidence of his driver is correct. He also only saw one green light, which he supposed was on the post at the Upper-Abbey-Mills Junction signal-cabin. When the train was very nearly stopped, and before the collision, and after he had seen the Tilbury train, he saw a red light, which he supposed was from a hand-lamp in the cabin. He applied his break and did all he could to stop. He had a good mind to jump, bnt it was too dark. He has only twice before approached this cabin from the branch in the dark, once with Webster, and once with another driver named Cherry.

The guard of this train, *John Harding*, was riding in the break-van next behind the engine. They passed the distant-signal at a speed of five miles an hour. As he was approaching the junction, round the curve, he looked out of his van to the signal-cabin, and he saw that the Tilbury light at the home-signal at the cabin showed green, which was right for a main line train to pass through the junction, but he could not see any other light at the cabin. He made sure that there was no light in the cabin applying to the branch line. He applied his break, and supposed that his engine-driver would pull up short of the junction. He called out to his driver, and kept on applying his break. He then saw his driver shut off steam and reverse his engine, and then the collision occurred. It was only just before the collision when he saw a red hand-lamp from the signalman's cabin. He saw the Tilbury train coming over the bridge. This was after he had noticed the green light for the Tilbury line. It was on seeing the green light that he looked for the train on the Tilbury line. He accompanies the train in question on the branch every tenth day. He thinks it is two months since they began to light the home-signal-lamps at the junction. He has approached that junction from the branch about three times since they have been lighted this year. He has run with the same train in previous years in the same way. He has not previously seen the branch lamp alight on the home post since the summer. He thinks if the branch lamp had been lighted at the cabin on the night in question he must have seen it. The night was dark but clear. If his engine-driver had seen the Tilbury light when he (the guard) first saw it, and had known it as applying to the Tilbury line, he would have had time to pull up.

James Davey, a foreman employed at the market-gardens near the junction-cabin, was a passenger in the branch-train from Canning-Town. He heard the engine-driver give a long shrill whistle in approaching the Upper-Abbey-Mills junction, and when within about 250 yards from it. He put the window down and looked out towards the signal-cabin. He saw a hand-lamp being waved there with a red light. The cabin was lighted up, but he did not at that time notice the signal-lamps. He then crossed to the other side of the carriage, and looked out towards the Tilbury line, and saw the Tilbury train coming. Seeing that a collision was inevitable, he opened the door and jumped out in the dark into his market-gardens. He jumped down the slope of the embankment, but was not hurt much. He was a good deal frightened, and did not do any work for two or three days afterwards. As soon as he "picked himself up and got himself together," he found himself in the rhubarb, and looked at the signal-cabin ; and he saw that a red light was showing from each of the posts at the cabin.

The signalman at the Upper-Abbey-Mills junction-cabin, *George Henry Grover*, is a relieving signal-man, and has done duty there off and on since September 1875. He has at times been there daily, and has lately been at the Upper-Abbey-Mills junction two days a week. He came on duty at the Upper-Abbey-Mills junction-cabin at 3.45 p.m. on the day of the accident. The first thing he did when he went into the cabin was to light the signals. He cannot say which lamp he lighted first. He lit the lamps of both home-signals before he did anything else, and put them in the cases on the posts. That was before he allowed any trains to pass, or worked his signals or points. He cannot say what was the first train that passed after he had lighted the lamps. He believes it was a train of empty carriages from Plaistow. He believes that train passed him about 3.54. He had no watch or clock at the time in his cabin, because the man whom he relieved had taken away the watch, and he therefore could not enter the time in his Record-Book. He remembers passing the local down-train, due at 4.2 past his cabin. That is the first train he can remember passing after he came on duty. He is certain that the lamps were lighted before he passed the first down-train, due to pass at 4.2, but he cannot be certain whether they were lighted before the up empty carriage-train passed. Now he recollects, he thinks, that the empty up-train passed him after the down local-train above referred to. He is now positive the lamps were lighted before the up empty carriage-train passed. He thinks it was about 4.30 when the up empties passed him from Plaistow. He judged the time by the passing of other trains. He believes it must have been a quarter or 10 minutes to 4 when he lighted the lamps. The first notice that he received, as regards the two trains that came into collision, was from Plaistow for the Tilbury up-train. He lowered his distant and home signals for that train. The Tilbury train was just coming over the Woolwich Branch bridge, a quarter of a mile south of his cabin, when he got notice from the Lower-Abbey-Mills junction-cabin, 500 yards distant from him, for the up Woolwich train. His signals were at "danger" for the Woolwich train. He did not pull them off at all for that train. They were both at "danger" when he got notice of that train. He did not show any hand-lamp to the Tilbury train, but he did to the Woolwich train. He showed a red light to the Woolwich engine-driver when that engine-driver was 300 or 400 yards from his cabin, and he kept showing a red light to the engine-driver the whole time afterwards until the collision occurred. Directly after the collision he walked round, and found the lamps both alight. The Woolwich engine-driver came to him in the cabin, and said, "Your signal is not alight," meaning the Woolwich up home-signal. He (the signalman) replied, "If he would walk round the cabin he would show him." The driver walked round with him, and he showed him that the lamp was alight. That may have been five minutes, or even a quarter of an hour after the collision. When he put the lamp in the case on the post, he took the perforated slide off the top of it, and placed the slide in the cabin. He has often, by previous examination, seen that the perforated slide causes it to smoke. The glass of the lamp has, he believes, been broken for about a month. He has never used a lamp in the case with the slide on. His signals remained at "danger" from immediately after the collision until

a quarter to 5 the next morning, at which time he left the cabin.

Isaac Pryke, the station-master at Stratford-bridge, reached the scene of the collision about 6 o'clock the same afternoon. He proceeded to the Lower-Abbey-Mills junction, and he walked to the Upper-Abbey-Mills junction-cabin. In walking round the curve, approaching the Upper-Abbey-Mills junction, he could see a green light on the Tilbury main-line signal-post, but no other light at the cabin. He did not go close to investigate whether the lamp was burning on the other signal-post, but he went close to the cabin on the Woolwich side of it. He did not particularly investigate whether the lamp was burning on the Woolwich branch up-line home-signal-post or not, but he did not see any lamp on the Woolwich branch-post in walking round the curve towards the cabin. He did not know in walking towards the cabin on which post the green light was which he had seen, but when close to the cabin he saw the green light on the Tilbury post. He did not tell the signalman to turn on his danger-signal.

Arthur John Wilkinson was on duty at the Upper-Abbey-Mills junction cabin on the day in question until about 3.40 p.m. The relieving man, Grover, came to the cabin at that time. He went away immediately, leaving Grover in charge. The last train that passed the cabin before he went away was, he believes, the 3.25 p.m. train from Barking for Fenchurch Street. He lighted the lamps before he left the cabin. He left them burning in the cabin. He did not light both lamps. He lighted only the lamp for the main-line-signal. He did not light the other because Grover came in. He had just finished lighting the one before Grover relieved him, and would have lighted the other if Grover had not come.

George Henry Grover, being re-called, is positive that he himself lighted both the lamps.

Arthur John Wilkinson, being re-called, is almost positive that he lighted one of them before Grover came.

Conclusion.

The evidence in regard to this accident is in some respects conflicting, but there is no doubt about the principal causes of it. No blame can be attached in any case to the servants of the Company with the Tilbury train, because the junction-signals were duly lowered for that train to pass through the junction, and the engine-driver was passing through it in obedience to those signals. I have no doubt that the evidence of the signalman is correct, to the effect that he kept his branch-signals at "danger" against the train from North Woolwich. If those signals had been efficient, then the blame of the collision would rest entirely with the engine-driver of the branch-train; but the signals were so inefficient that it would be quite unfair upon that engine-driver to saddle him with any blame in regard to the occurrence. I remained in the neighbourhood until after dark to test the signals, and to ascertain the truth in regard to them, with reference to the conflicting evidence which had been given. I found that the lamp of the branch up-home-signal, though showing a bright red light, was only visible to an engine-driver for a comparatively short distance after he passed the Lower-Abbey-Mills junction-cabin, in a position in which especially a man inexperienced in approaching the junction after dark, would not have noticed it; and that it became, in consequence of the angle at which it was fixed, invisible to him as he approached the Upper-Abbey-Mills junction-cabin. Not only so, but the only light that was then visible to him was that applying to the main-line from Tilbury. The engine-driver of the branch-train in question, having been inexperienced in approaching this cabin in the dark, would not, therefore, have recognized the red light on the branch home-signal-post when it was visible to him, and might only too easily have been misled by the one green light which, as he states truly, he found displayed in approaching the junction-cabin. It would appear that he passed the distant-signal, which was at danger, of which the lamp had not been lighted, but of which he could see the semaphore-arm, at a slow speed, and that he was not proceeding at any incautious speed in approaching the junction, considering that he was misled by seeing only one green light at the junction-cabin. When he afterwards saw a red light from the hand-lamp of the signalman, it was too late for him to stop his train in time to avoid the collision.

I understand from Mr. Stride, who is now the General Manager and Engineer of the London-Tilbury-and-Southend Railway, that since he has been for 18 months in charge of that railway, he has applied locking apparatus, and generally improved the arrangements, at all the junctions, excepting this one, and that he is now about to introduce locking-apparatus, and generally to improve the signal arrangements at this junction, which are certainly very much required.

I have, &c.,
H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the London, Tilbury, and Southend Railway and the Great Eastern Railway Companies on the 5th January 1877.

METROPOLITAN AND ST. JOHN'S WOOD RAILWAY.

Board of Trade,
(Railway Department),
13, *Downing Street*, 20*th December* 1876.

Sir,

In compliance with the instructions contained in your minute of the 15th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 9th instant, at the St. John's-Wood-Road station of the Metropolitan-and-St. John's-Wood Railway.

In this case, the 4.18 p.m. up-passenger-train from Swiss-Cottage for Baker-Street was turned from the single line through a pair of facing-points to the down instead of to the up-line, in approaching the St. John's-Wood-Road station; and it came into collision with the 4.18 p.m. down-passenger-train from Baker-Street for Swiss-Cottage, which was standing on the down-line at the station. The cast-iron buffer-shells on the engine were fractured as well as a coupling. No persons have complained of injury.

Description.

The signal-cabin at the St. John's-Wood-Road station is on the south side of the down-platform. It contains 14 levers, of which five are spare levers, in a locking-frame. In approaching that station from the Swiss-Cottage station, there are a pair of points, 136 yards from the cabin, by means of which, as facing-points, the up-trains pass from the single line to the up-platform, and, as trailing-points, the down-train passes from the down-platform to the single

line. These points are provided with a locking bolt and bar, worked from the same lever as the points. There is a distant-signal 506 yards from the signal-cabin and 369 yards from these points. The lever for working the distant-signal is interlocked in the cabin with the lever for working the points, so that when the distant-signal is at "caution" for an up-train to run into the St. John's-Wood-Road station, the points are locked in the right direction for the up-platform line.

Evidence.

The up-train consisted of a tank-engine and five carriages, all connected with the vacuum break, which, when applied, acts throughout the train. It left Swiss-Cottage at 4.18 p.m. punctually.

The engine-driver, *Edward Burridge*, states that he ran from the Swiss-Cottage to the St. John's-Wood-Road station in due course. He found the distant-signal showing a green light for him to run into the station, and he passed it at a speed of 15 miles an hour. He could not see the points as he approached them, because it was dark in the tunnel; but when passing through them he felt his engine twisted in the wrong direction—towards the down-line in the station. His steam was not then applied. He reversed his engine, and applied his steam. The break had already been applied before he passed through the points. He pulled the valve open in order that the break might act with more force, but his engine came into collision with the engine of the down-train at a speed of two miles an hour. He remained on his engine, and was not hurt.

The fireman, *Edwin Abbott*, has nothing to add to the evidence of the engine-driver, which is quite correct. He applied the hand-break of his tender as early as he could to assist in pulling up the train.

The guard, *Robert Hardwidge*, was riding in a compartment in the last carriage of the train. He left Swiss-Cottage in due course, and nothing unusual occurred until he felt a slight shock on entering the St. John's-Wood-Road station. He was standing up in his van, and had put his head out of the window, when he saw he had run into the wrong road in the station. He knew of nothing unusual until the collision occurred.

The down-train consisted of a tank-engine and six coaches. It reached the St. John's-Wood-Road station at 4.21 p.m. punctually.

The engine-driver, *Joshua Ingham*, was standing on his engine, waiting for the arrival of the up-train. He could see the reflection of the head-lights from the train through the tunnel, and knew, therefore, that it was approaching. He turned round to see whether all his passengers had got into the carriages, and on looking round again he saw that the engine of the up-train was approaching him on the wrong road. He reversed his engine, told his mate to take off the break, and had just begun to back out of the way when the engine of the down-train struck his engine. His engine went back about 10 or 12 yards, partly from the effect of the collision, partly from the steam applied.

The fireman, *Arthur Kempster*, took the break off immediately his mate told him to do so, just before the collision occurred.

The guard of the down-train, *W. Thrower*, was standing at the rear of his train on the station-platform when he suddenly saw the effect of the collision. He had not seen anything of the signalman either before or after the collision.

The signalman on duty in the signal-cabin, *John Brown*, had done duty in the same cabin for 11 days, and previously for 14 days at the Baker-Street cabin. He had had no other training, except the 14 days at Baker-Street, and seven days training in the St.-John's-Wood-Road cabin, and he had been four days in charge of that cabin before the accident happened. He had acted for eight months as pilotman with the trains on the single line between Baker-Street and St.-John's-Wood-Road. He had also been a porter for nine months at the Swiss-Cottage station. He took the two trains on, one from Baker-Street and the other from Swiss-Cottage, at the usual time, about 4.18 p.m. and he knew, therefore, that they were both on their way to the St. John's-Wood-Road station. He then walked along the platform to the porter's room, to fetch water for making his tea; but finding there was no water in that room, he crossed to the room on the up platform, and obtained water from a tap in the corner of that room. He walked along with his can of water to the south of the up-platform, and then saw the down train passing from Baker-Street. As soon as it had passed he crossed over to the signal-cabin, and in doing so he saw the up-train coming through the tunnel. As soon as he reached his cabin he gave "Line-clear" to Baker-Street, returned the up-distant signal to "Danger," gave "Line-clear" to Swiss-Cottage, and gave the down-train on to Swiss-Cottage. He thought that at that time the up-train had arrived, and was standing at the station, and he moved over his point-lever to allow the down-train to depart. He only found out his mistake when it was too late to correct it. He had been told by the station-inspector that he ought not to return his distant-signal to "Danger," and thus to unlock his points, until he had seen the up-train at a stand in the station. Where he made the mistake was that he thought the train had arrived at the station, and didn't take care to see whether the train had actually come to a stand in the station.

Conclusion.

This collision has been caused by a stupid mistake on the part of the St.-John's-Wood-Road signalman, who did not, in accordance with his instructions, wait to see that the up-train had arrived at the station before returning his distant-signal to "Danger," and altering his points. This signalman was a man of excellent character. He had been for 12 years in the Royal Artillery; he had undergone, after nine months' service as porter, and eight months as pilot-man, 14 days training in the Baker-Street cabin, and seven days in the St. John's-Wood-Road cabin; and had been four days in charge of the latter cabin when he made this mistake. It is evident that he turned over the facing-points during the time that the up-train was running between the distant-signal and those points, and that he thus, after leading the engine-driver to believe that the points were right for him to run into the station, altered them to the wrong direction.

As these points are in the tunnel, and cannot be seen by an approaching engine-driver, and as they are on a steep falling gradient, and 369 yards from the distant-signal, it would be wise to provide at least a disc to work with them, so as to afford an indication to an approaching engine-driver of their position, in the event of their not being properly set for him to run into the station.

The engine-driver would have brought his train to stand in the usual course 59 yards beyond the point of collision, and a disc-signal of this sort would therefore have given him sufficient warning to enable him to stop short of a train thus standing in the station.

I have, &c.,

H. W. Tyler.

To the Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 5th January 1877.

MONMOUTHSHIRE RAILWAY.

Board of Trade,
(Railway Department,)
10th January 1877.

Sir,

In compliance with the instructions contained in the order of the 1st instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 19th ultimo, at Bassalleg station on the Monmouthshire Railway.

A London and North-western passenger train which came from the Sirhowy Railway ran into a Monmouthshire Company's coal train which was standing at Bassalleg station. The guard of the passenger train had three ribs broken, and four passengers are returned as having been hurt.

The Brecon and Merthyr Railway joins the Monmouthshire Railway at the south end of Bassalleg station. The junction is protected by the ordinary home and distant signals, which are worked from a raised cabin close to the junction-points. The junction home signals are interlocked with the points, but the distant signals are not interlocked. The locking apparatus is an old one, and is worn out. The junction home signals are placed above the signal-cabin, and the down distant-signal towards Tydee is about 661 yards from the junction cabin. When an engine-driver who is approaching Bassalleg junction from Tydee has passed the Bassalleg down distant-signal he loses sight of the junction home-signal for aboutl 250 yards before he reaches Bassalleg station, in consequence of the curves of the railway and the high bank at the north-east side of the line.

On the day in question, a coal train from Abercarn was stopped at Bassalleg station by the junction home signals, which were at "danger," in order to allow a Brecon and Merthyr passenger train, which was standing at the Brecon and Merthyr Bassalleg station, to proceed to Newport, in front of the coal train.

The engine-driver of the coal train as he approached Bassalleg found the down distant-signal at "all right," but on perceiving that the home-signal was at "danger" he pulled up at the station at about 5.34 p.m. The coal train had been standing about seven minutes at the station when it was run into by a London and North-western passenger train from Tredegar. The coal train consisted of a tank engine, 26 loaded waggons, and a break-van, with a guard and breaksman in charge. The passenger train consisted of a tank engine, travelling with its coal bunk in front, a carriage with a break compartment, and the guard in charge, and three coaches with Fay's continuous breaks coupled to the break carriage. The engine-driver of the coal train and the engine-driver of the passenger train both stated that as they approached Bassalleg station they found the down distant-signal at "all right." The passenger train was in charge of a pilot engine-driver, as the regular driver of the engine, though an experienced man, was not well acquainted with the road. The passenger train passed the down distant-signal at a speed which is variously estimated by the different witnesses to have been from 12 to 40 miles an hour, and the engine-driver stated that as it ran through the over bridge, which is situated about 286 yards from the place where the van at the tail of the coal train was standing, he perceived one of the lights on the coal train, and immediately afterwards he saw the three lights at the tail of the coal train; steam was shut off at the time, and that he thought he was travelling at that time at a speed of about 12 or 14 miles an hour. He whistled for the guard's breaks, applied the engine breaks, reversed his engine, put steam against her, and sanded the rails, but he could not stop his train before it ran into the coal train at a speed of about six miles an hour; the fireman and the two drivers jumped off the engine of the passenger train, and the guard and breaksman jumped out of the van at the tail of the coal train before the collision.

The coal bunker of the passenger engine was injured, and a few carriage windows were broken, but no other injury was done to the passenger train, and none of the vehicles left the rails. The break-van of the coal train was damaged, and two of its wheels were knocked off the rails. The buffer of one coal waggon was damaged.

The signalman who was on duty at Bassalleg is an experienced man; he stated positively that he had put the lever of his down distant-signal so as to place that signal at "danger," about 17 minutes before the arrival of the coal train. This signal was put to danger after the passing of a previous coal train from Ebbw Vale, but there is no doubt that this signal was at "all right" when the coal train arrived from Abercarn, and when the passenger train arrived from Tredegar, as the evidence of the servants with both these trains is distinct on this point, and this evidence is borne out by the evidence of the signalman at Rogerstone sidings, which are about half a mile north of Bassalleg station. The lever which works this down distant-signal, when pulled by the signalman so as to put the signal at "all right" will not remain in that position unless it is held there, and consequently a wire has been provided by the men on duty, by which the signal-lever can be fastened. On examining this signal carefully, before and after my inquiry, I found that it does not work satisfactorily. At one time the red glass did not cover the lights properly, owing to the lamp not having been wound up to its proper position, and when working the signal from the signalman's cabin I found that the back glass did not cover the back light properly. It covered it, or travelled over and past it, thereby uncovering it again, according as the lever handle was worked quietly or quickly.

The accident was caused by this down distant-signal being at "all right" when it should have been at "danger," but whether this was caused by the signalman at Bassalleg junction having tied the lever down with the wire and forgotten it, when he took the signal "off" for a coal train from Ebbw Vale, which arrived about 17 minutes before the coal train from Abercarn, or that he worked the lever properly and the signal stuck, or that the glass spectacle did not cover the light properly, I have been unable to determine. The evidence of the pilot engine-driver of the passenger train was not satisfactory. If he was travelling at the speed that he stated he was, viz., 12 or 14 miles an hour when he first saw the lights of the coal train, he ought easily to have been able to pull up, considering the size of his train, and that all the coaches were provided with Fay's continuous breaks. He had about 250 yards to pull up in. The gradient of this 250 yards falls 1 in 175 for the first 170, and 1 in 225 for the last 80 yards. This engine-driver was misled by the distant-signal, which showed "all right," and he, therefore, did not contemplate having to pull up until he reached the platform at Bassalleg station. The junction home-signal was at danger, but it is not a good signal, as it is lost sight of for some time after the distant-signal has been passed. A new locking frame should be provided at Bassalleg junction, and the signals should be improved.

The Secretary,
(Railway Department,)
Board of Trade.

I have, &c.,
F. H. Rich,
Colonel R.E.

Printed copies of the above report were sent to the Monmouthshire, the Brecon and Merthyr, and the London and North-Western Railway Companies on the 22nd January 1877.

NORTH BRITISH RAILWAY.

Board of Trade,
(*Railway Department*),
19th January 1877.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 14th ultimo, the result of my inquiry into the circumstances connected with the collision which occurred on the 11th ultimo, near Easter Road junction, on the Leith and Granton Branch of the North British Railway.

In this case, as the 5.20 p.m. passenger train from Waverley station, Edinburgh, to Haddington was proceeding on its journey, after having been stopped at the mouth of Calton tunnel (about a quarter of a mile from Waverley station), the engine separated from its train, and proceeded along the main line, while the carriages were turned down the Leith and Granton branch, which joins the main line a short distance beyond the east end of the tunnel, and 50 chains from Waverley station. The carriages ran along this branch with increasing speed (the gradient falling sharply at 1 in 68 and 1 in 107 towards Leith) to Easter Road junction, where they were turned into the Leith Walk goods yard through facing-points which were open for the goods yard, and there, at a point 92 chains from Waverley station, ran into a break-van and engine which were just entering the goods yard upon their arrival from Portobello.

Thirteen passengers are returned as having sustained injuries, one of them, it is stated, of a serious nature. The guard of the passenger train was seriously injured with concussion of the brain.

In the passenger train (which consisted of six coaches, including a break compartment in the first and last) two coaches left the rails, and all of them were more or less damaged and broken up.

The goods-van mounted the goods-engine, and the buffers of both were damaged.

This report has been delayed in consequence of the injuries received by the guard of the passenger train, from which injuries he has only just recovered sufficiently to be examined. The following is the evidence bearing on the occurrence:—

Evidence.

1. *George Linklet*, spare driver 19 months, fireman two years previously.—I have been used to drive tank engine No. 39, the one attached to the passenger train, about 10 months. About 5.10 p.m. I joined the train, my fireman (David Dougherty) coupling the engine on to the train. The engine was chimney first, and the van coupling was used to couple it to the train. There was no screw coupling at the time belonging to the engine, but only a goods coupling, the end link of which was hanging on the engine hook. I did not see the coupling after Dougherty had put it on. He had been with me about five or six weeks before the collision, and had always been in the habit of coupling the engine to its train. The spare screw coupling now hanging on the engine was supplied about a week after the collision. We started punctually after the 5.12 p.m. Leith passenger train, which was late in leaving, and were stopped by the signal at the west end of Calton tunnel about three minutes; the signal was then dropped, but not the distant-signal from Abbey Hill junction, although as soon as we cleared the tunnel we found the repeater of this distant-signal, the home main line signal at Abbey Hill, and the advance signal, all off. Between the east end of the tunnel and the repeater (about 100 yards) I first found out that we were running without our train. I was the first to notice it and told the fireman. I am quite sure we brought the train into the tunnel, and there parted company with it. I had shut off steam in the tunnel in case the Abbey Hill home-signal should be against me, but I did so without any jerk, although I think it must have been then that the coupling jumped off the engine hook. On finding out what had occurred I applied the break a little; and on passing Abbey Hill cabin shouted to the signalman that the train had broken away. I don't know whether he heard me, as a down train from St. Margaret's was passing at the time. We then passed St. Margaret's cabin, where the signals were right for us, but without trying to attract the signalman's attention, not knowing what to do for the best, our speed at the time not being more than four or five miles an hour. The Piers Hill signals were against us, and I whistled for them before reaching the St. Margaret's cabin, and they were lowered. After passing the cabin at Piers Hill, I stopped between the cross-over road and the advance-signal, which was off, and sent back my fireman to the signalman to tell him that we had broken away from our train. The signalman then waved me back to the cabin. I went back, and he said he would let me across the road that I might return to Waverley. I accordingly crossed the road and went back to Waverley, where I was told that my train had run down the Leith branch and come into collision with a goods train. The last time I saw my train was when I was near Abbey Hill cabin, and it was then coming out of the tunnel; a goods train passing on the other line then prevented my seeing it further, and I afterwards did not know what had become of it. When I have been acting as fireman I have always put the screw coupling link *under* the goods chain link. About 10 days after the accident I had my attention directed by the superintendent of the line to the fireman having coupled the engine to the van with the link of the spare screw coupling resting above the van coupling link (which was in the van hook) instead of being below it. I had intended to look at this myself before starting, just as my attention was called to it. I had made a point of examining the coupling myself every night after the accident, and once found that the van coupling was hanging down. I ought to have stopped at Abbey Hill on the way back to Waverley to inquire about my train, and cannot explain why I did not do so.

2. *David Dougherty.*—I have been relieving fireman since October, having been 14 months previously a cleaner at St. Margaret's. I am just past 20 years of age. I have been running with the Haddington train since November 1st. I remember coupling the engine to the train on the day of the collision. The goods link was hanging on the engine hook, and I placed the link of the van screw coupling on to the engine hook, and I am quite sure I placed the goods link *over* the link of the van screw coupling. This is the way I always do it. I remember coupling the engine to the train about 10 days after the collision, when the superintendent was present. I was then using a new screw coupling which had been supplied to the engine since the accident, and I thought the complaint was that the van screw coupling was hanging down. I was numb with cold and could not get it up, and the driver got down and made it right. The driver had examined the coupling every night but that of the collision; why he did not on that occasion I don't know. We then started, and I am quite certain we had the train with us up to Calton signal, as I saw it coming with us into the tunnel. I was then firing, and on getting out of the tunnel the driver said to me, near the repeater of the distant-signal, "The train has broken away," upon which I looked round and missed it. I next saw it again as it came out of the tunnel, when we were a little on the west side of Abbey Hill cabin. The driver

had shut off steam in the tunnel after starting, but I felt no jerk from any sudden slacking. The driver shouted to the Abbey Hill signalman that we had broken away, but I don't know whether he heard him. We were whistling going through St. Margaret's, and had no communication with the signalman there. The driver said he would run forward and try and catch the train as it followed, but not seeing the train following us, we stopped a little east of Piers Hill cabin, when the driver told me to go back with a red lamp to the signalman, and tell him that the train had broken away, and he did not know where it was, but that he had not seen it coming through St. Margaret's. I did this. The signalman said he would signal back, which he did; that he would let the engine across. I walked forward and had got to St. Margaret's when my engine overtook me. The driver then spoke to the signalman there, who told him to go on to Edinburgh, upon which I got on to the engine and came into Waverley. Nothing passed between the driver and signalman at Abbey Hill, and we heard nothing as to where the train had gone to, till somebody told us at Waverley that it had come into collision with a goods train at Easter Road. There was no reason why we should not have stopped at Abbey Hill on the way back to have inquired about where our train was. My idea was that it might have been taken back into Waverley by another engine.

3. *William Gall*, platform inspector at Waverley.—I was on duty when the 5.20 p.m. train started for Haddington. It started at right time. Guard Robertson was in charge in the rear break compartment. He was quite sober. I am not aware whether there was any one else in either of the break compartments. The train was correctly made up as far as the carriage couplings were concerned. There were two side lights and a tail lamp. There is no difference in the head lights of an empty engine and of one drawing a train.

4. *Allan Fyfe*, signalman at Calton tunnel cabin.—The Leith train passed at 5.22, and was cleared back from Abbey Hill at 5.24. The Haddington train was stopped at the home-signal at 5.23, and delayed one minute, and then started apparently altogether. At 5.26 I got "line clear" back for an *engine*, but would not take it. This was repeated, and then "line clear" for a passenger train was given, which I accepted. A few minutes afterwards I learnt by speaking instrument from Abbey Hill that the Haddington train had broken away from its engine.

5. *Joseph Bell*, signalman at Abbey Hill junction.—At 5.23 p.m. on the 11th I cleared back the Leith train to Calton West, and at 5.23 took the Haddington train on line. I knew it was a passenger train, having received one beat to the left, the signal for an empty engine being three beats. The engine of the train passed at 5.25, having a tail lamp, but I saw that it was without its train, and thought that there had been a mistake in signalling it forward. I twice attempted to clear it back as an empty engine, but could not get the signal taken. After the second attempt to clear it as a light engine, the carriages came in sight, and it then struck me that the engine must have broken away from the carriages. At 5.20, I took train on line from Easter Road for a Granton passenger train, which passed the junction at 5.27. This train was approaching the junction while the signals were off for the Haddington train, and was approaching slowly. After the engine of the Haddington train had passed, I set the points for the train from Granton, and the latter and the carriages of the Haddington train passed each other at the junction, the facing-points having been of necessity set for the Leith and Granton line. I at once gave the runaway signals on the right road (a series of double beats) to Easter Road. Line was clear at this time between my cabin and Easter Road on the down line. The driver of the Haddington train made no attempt to communicate with me as he passed towards St. Margaret's. There was nothing passing on the down road at the time. On seeing only the engine pass and not a train, I telegraphed St. Margaret's on the speaking instrument, "engine off" (*i.e.*, engine only), the line having been blocked for a passenger train.

6. *John Rottie*, signalman at Easter Road.—The 5.12 p.m. train to Leith passed my cabin at 5.27, and I gave "line clear" for it at 5.27, and at 5.28 the Granton down train was cleared back to me from Abbey Hill. At 5.29 I got the signal for a runaway train on the right line from Abbey Hill. At 5.27, after the Leith train had passed, I allowed a goods train to cross from Piers Hill branch into the goods yard; before doing which there are no instructions for blocking the line in either direction. On receiving the runaway signal, the goods train was on the facing-points leading into the goods yard, the runaway train passing at about 5.29. I could not speak as to its speed, nor whether the breaks were on the runaway train. There was a heavy goods train passing on the other line at the time, and a bridge holds the steam.

7. *Alexander Crawford*, signalman at Piers Hill junction.—I was on duty at Piers Hill on the evening of the 11th. I received the signal for the Haddington train from St. Margaret's. Before the engine arrived I got the message "engine off." I had my signals off, but the engine stopped about the advance signal. The fireman came back to me and said that they had lost their train, but nothing passed as to where. I allowed the engine to cross the road and passed it on to St. Margaret's, but cannot say where the fireman joined it.

8. *Archibald Romson*, goods guard.—On the 11th ult. I came from Fala Hill to Portobello with a train of minerals, and having left it there came with the van and engine only to Leith Walk goods yard as the end of the day's work. Guard Gibson was alone in the van with me. We were stopped at the Easter Road junction signal about five minutes, and were then allowed to proceed, and had just got through the facing-points leading to the goods yard, when without any warning we were run into by the carriages of the Haddington train. Our speed was about four miles an hour, but that of the other train very fast. My van mounted the engine and was knocked forward. Two of the carriages left the rails. My van had its buffer ends knocked off, and the engine buffer discs were injured. I cannot speak as to whether the breaks of the passenger train were off or on.

9. *John Robertson*, guard two years.—I was in charge of the 5.20 p.m. train to Haddington on the 11th December. It consisted of six vehicles, including two break compartments. I was in the rear one. There were no continuous breaks on the train. We started two minutes late. We were slowed at Calton tunnel mouth, but not quite stopped. I observed nothing particular in the motion of the train when the speed increased after slacking at the tunnel. I first remember noticing that anything was wrong on passing Abbey Hill station platform (*i.e.* after entering the Leith and Granton branch), when I saw that we were going in the wrong direction, but I did not find out that the engine had left us. I remember putting the break on on passing Abbey Hill platform, but can remember no more, as the collision then occurred and knocked me insensible. I believe I was standing on the steps next the break handle, and was thrown into the body of the van. I was injured in the head and back. The carriages composing the train were those that had formed it for about two months. The front van was marked for repairs. Previously to this the train had run only on the branch from Haddington to Longniddry.

The primary cause of this somewhat extraordinary collision was the improper coupling of the engine to

its train before it started from Waverley station. In the absence of a proper screw coupling (one of which was supplied after the collision), a carriage coupling was used for the purpose, and the link of this was, no doubt, placed by the fireman *upon and above* instead of *underneath* the link of the goods coupling, which was hanging on the engine hook. This caused the link of the carriage coupling to rest very near the top of the engine hook, and a slight jerk—such as was most likely received when the engine started, after having been stopped at the mouth of Calton tunnel—would be sufficient to make the link jump off. The driver is much to blame for not having seen to this coupling himself, especially considering the youth and inexperience of his fireman.

It seems most probable that the engine separated from its train upon starting after having been stopped at the west end of Calton tunnel, the train following the engine down the falling gradient of 1 in 78, which extends to Abbey Hill junction. The signalman there thinking, at first, upon seeing the engine alone, that he had received an improper signal from the Calton signalman, who had advised him that the Haddington train was on line, allowed a passenger train to cross from the Leith and Granton branch on its way to Waverley; before doing which he was obliged (and most fortunately so, owing to the interlocking of his points and signals) to set the facing-points right for the Leith and Granton branch; through these facing-points the carriages of the Haddington train ran, just as the train from Granton was crossing the junction; a worse collision than that which ensued having thus been saved by the interlocking arrangements. The carriages then pursued their course down falling gradients of 1 in 68 and 1 in 107, until just after passing through Easter Road junction they came to the facing-points leading to the Leith Road goods yard, which were open for the goods yard, as an engine and van were at the time on the crossing. Into this van they ran with great velocity, and were then brought to a rest after having run by gravity a distance of about three quarters of a mile. It was fortunate that the points of the Leith goods yard were necessarily at the time open for the goods yard, as otherwise he Easter Road signalman would probably have been doubtful what best to do, and would have allowed the carriages to continue on the main line, when they would have overtaken and run into the rear of the passenger train for Leith, which was then standing at Leith Walk station.

The conduct of the driver of the train after becoming aware (as he says he was when leaving the tunnel) that he had lost his carriages was strange and inexplicable, and almost leads to the inference that he was not quite certain whether he had ever started with them from Waverley. It is otherwise impossible to understand why on his way back he should not have stopped at Abbey Hill, and there have inquired as to what had become of his train, instead of going straight back to Waverley.

The guard of the passenger train states in his evidence that the train was not stopped but only slowed at the entrance of Calton tunnel, the evidence of the signalman being that it was stopped a minute, and of the driver three minutes. The guard must therefore have been mistaken, and he could not have been keeping much look-out, or he would have been likely to have noticed the fact of his train having been turned on to the Leith and Granton branch before he did, and have thus had a better chance of arresting its progress with his breaks.

The carriages which composed the Haddington train had been running on the main line for only about two months before the collision, having before this been used only on the branch between Longniddry junction and Haddington. Their general condition was such that they were unfit for use at all, and ought long ago to have been broken up.

It came out in evidence that even at junctions such as that at Easter Road, where two lines approach each other on falling gradients, trains are allowed to approach the junction simultaneously, the home signals alone being depended on to guard against collision from one or the other overrunning. This is a very risky mode of working, and is sure sooner or later to result in a collision.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 12th February 1877.

NORTH BRITISH RAILWAY.

Board of Trade,
(*Railway Department*),
31*st January* 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 17th instant, the result of my inquiry into the collision which occurred on the 20th ultimo (although not reported by the company till the 15th instant), at Cowdenbeath station, on the Fifeshire lines of the North British Railway.

In this case, the 4.28 p.m. down coal train from Thornton junction for Dunfermline, due to stop at Cowdenbeath station at 5.35 p.m. (where it was shunting), was run into by the 7.45 p.m. up goods train from Dunfermline for Thornton, due to stop at Cowdenbeath station at 8.5 p.m.

The drivers and firemen of both engines were more or less injured.

Both engines were considerably damaged, that of the coal train the most, and in this train four waggons were broken up and three others damaged. In the goods train eight waggons were damaged.

Cowdenbeath is an ordinary roadside station on the double line between Dunfermline and Thornton. Three sidings join the up line on the south side of the platforms, the most distant points being 280 yards from the centre of the down platform. There is also a cross-over road between these points and the platforms. For the protection of the station there is only a distant-signal in each direction, the levers for working which are situated about the centre of the down platform, and not in any way interlocked with the point levers. The gradient at and near the station falls towards the south at 1 in 150.

The collision occurred about 9.35 p.m. on the up line at a point 285 yards south of the lever handles, or 965 yards inside the up distant-signal.

The evidence is as follows:—

1. *Thomas Bolton*, station-master at Cowdenbeath 5 years: "I was in the office on the 20th ultimo when "the 4.28 p.m. coal train arrived at about 9.20 p.m., "and I remained there till after the collision. Porter "William McGlasson was in charge of the signals. "He had been employed at the station six or seven "weeks at that time. He was very attentive to his "duties, and knew how to work his signals. Mc "Glasson had lit the down distant-signal and Paterson "(another porter), the up distant-signal, Paterson "having left duty at 6.30 p.m. Both these signals "were burning at the time of the collision. McGlasson "was perfectly aware that he should have both distant "signals at danger when a crossing was taking place. "The signals at this station are kept at all-right unless "anything requires them to be at danger. When the

" 4.28 p.m. train arrived McGlasson was in the lamp " room on the down platform, which is about 10 yards " on the up side of the signal handles. I heard the " up goods train pass the office about 9.25 p.m., but " heard no whistling from it, and about 10 minutes " afterwards the driver of the coal train came and " told me that there had been a collision. I at " once went up to the spot, going on to the down " platform on my way, and noticing that the handle " of the up distant-signal lever was in the position of " all-right, the tail of the up goods train being some " distance eastward of it. I could not see the back " light of the distant-signal on account of snow which " was then falling. The handle of the down distant- " signal lever was in the position of danger. McGlas- " son acknowledged to me a few hours after the colli- " sion that he had neglected or forgotten to put to " danger the up distant-signal. Paterson who came " to the station just as I had seen the up distant- " signal clear, put this signal to danger on my speak- " ing to him. The driver of the up train said that " seeing the up distant-signal off, and getting no " signal on the platform, he had gone on, although " timed to stop. The rule as to stopping unless " signalled past by hand-signal is not rigidly obeyed. " I have never reported a driver for not stopping. " There was nothing for this up train to lift on this " occasion. From the 1st November, when this train " began to run, to 20th December, it had stopped " only twice to leave waggons."

2. *Robert Paterson*, porter at Cowdenbeath for about four months on the 20th ultimo: "I had left " duty about 7 p.m., having lit the down distant-signal " (which had been blown out), about 6.50 p.m. The " up distant-signal had been lit before 4 o'clock, and " had not been blown out. Its back light was visible. " I was in my house about 200 yards from the colli- " sion when it occurred, and hearing the noise ran to " the spot. I then ran to the station, and met the " station-master on the platform going towards the " spot. He told me to look at the signal levers. I " found the up distant-signal lever standing in the " position of clear. I put it on to danger. The down " distant-signal was at danger. The night was very " stormy, snow falling at the time. A down passen- " ger train was due at Cowdenbeath at 9.15 on its way " to Dunfermline. I went up the line to stop this " train, but the driver did not see my red light, and it " was stopped near the down distant-signal by the " station-master. Drivers sometimes run past the " station when timed to stop without being waved " past. This same train ran past the station when " the distant-signal was off last Saturday night without " any hand-signal. I was on duty at the time, but " was not in charge of the signals. I did not hear " the driver whistle."

3. *John Thomson*, driver four years: "I started at " 8.40 p.m. from Thornton, engine first, with the " 4.28 p.m. mixed train of coal and goods for Dun- " fermline. I was late from having lost time on " previous runs from the weather and other causes. I " reached Cowdenbeath about 9.30 p.m. with seven " empty waggons and a van, having to leave the " seven waggons in the siding furthest from the " station, near the points of which the collision after- " wards occurred. I whistled for the pointsman after " I had stopped clear of the cross-over road, and told " him when he came up that I had to shunt out of the " way of the down passenger train, which was then " over due; this train had been telegraphed 25 minutes " late on its up journey from Dunfermline, and I was " allowed to leave, and was not required to shunt for " this train at Cardenden where we stopped to do some " work. The pointsman said nothing but ran to the " cross-over road points, held them open, and waved " me back. There is no rule as to changing the head " lights of the engine before crossing, but it is custo- " mary to change them. I had neglected to do this " on the present occasion, and I only noticed they had " not been altered till just before the collision. I did " not ask the porter whether the up distant-signal was " at danger, but supposed it was; the down distant- " signal was off when I passed it. I had just got on " to the up line when I turned round and saw the up " goods train close on me. I had not heard any " whistling before this. My fireman was at his break " also looking towards Thornton, and Porter McGlas- " son was on the foot-plate of the engine. I was " looking for a signal for the guard to stop. I had " just stopped when the collision occurred; the break " was not on. The fireman jumped off, but neither I " nor McGlasson did. The blow was not so heavy, " but it knocked us back a bit. The two leading " wheels of the tender were thrown off the rails, and " four or five of the waggons. The collision took " place at 9.35 p.m. I did not see McGlasson after " the collision. I was knocked about, and injured in " the leg, and have been off duty ever since, but return " to work to-morrow. I did not ask Driver Horn " why he had not stopped at Cowdenbeath; I know " that the rule as to stopping is not always attended " to. I was waved past Lochgelly by the station " agent."

4. *William Brown*, fireman altogether 13 or 14 years, this time for the last 13 or 14 months: "I agree " with the driver's evidence. I had just time to jump " off into the 6-ft. space, but tumbled down. My " train had stopped. I was injured by the fall, but " was not struck by anything, and was off duty about " a month."

5. *George R. Dick*, goods guard 2½ years: "Having " ascertained that the down passenger train was very " late (but not how many minutes), I started from " Thornton station at 8.40 p.m., having to stop at " Cardenden and then at Cowdenbeath. I saw the " agent and porter at Cardenden, and nothing was " said about shunting for the passenger train. We " were waved past Lochgelly and stopped at Cowden- " beath. I had seen the up passenger train pass " between Cardenden and Thornton, and I therefore " thought we ought to shunt for it at Cowdenbeath. " I did not notice the down distant-signal. I got out " of my van when the train had stopped, and I was " standing on the footstep of my engine on the north " side, when the driver said there is 'a walk in,' and " I stepped off and escaped without injury. The " other train was coming pretty sharp, about 12 miles " an hour. I heard no whistling at all from the " other engine. I don't know whether the up distant- " signal was on or not to protect us. The collision " occurred at 9.35. Four empty waggons out of " seven were knocked to pieces. The van was not " injured. It is not common for drivers to pass a " station where they are timed to stop without a " wave. One of my side lights was changed before " the collision, but there was not time to change the " other."

6. *John Horn*, driver four years with the North British Company: "I was driving the 2.25 p.m. goods " train from Sighthill to Thornton, and left Dun- " fermline at 9.15 p.m., about 1½ hours late, having " lost time along the road. I was running engine " first with a load of 11 waggons and a van, my first " timed stop after Dunfermline being Cowdenbeath. " As I approached Cowdenbeath up distant-signal, " where from the coarseness of the night I had nearly " stopped, I found it off, and put on steam, not " intending to stop at the station, as on the 1st " November, when the train began to run, the agent " had informed me that there would be nothing for " me to lift, as everything would be away before we " came, and I had worked the train regularly every " day almost up to the time of the collision, and had " never got waved past unless the distant-signal was " on against me. I passed the station about 10 miles " an hour, and saw a green lamp as I passed the " station, and thought it was on the opposite road,

" and I did not notice that anything was on my road " till about four yards from the other engine, when I " saw it was in my way. I had no time to do any- " thing. I was stunned for a short time. I was hurt " in the knee and breast, and was off duty for 16 " days. It might have made a difference if I had " seen the other engine light red instead of green. I " know the rule as to stopping at stations unless " waved past, but the practice has been on the Stirling " and Dunfermline line to keep the signals clear " unless there is anything to lift, when the signals are " kept at danger (this is also against the rule). I am " timed to stop at Cowdenbeath at 8.5, but often pass " much later, after the station has been shut up. In " this case it would be my duty to stop and then for " the guard to wave me on. I whistled before coming " to the distant-signal, where I nearly stopped and " asked the fireman if it was clear, and also crossed " the foot-plate to look myself."

7. *Henry McMillan*, fireman three years: "I " agree with the driver's evidence. The collision " took me quite unawares. I was injured about the " head, and was on the sick list about 15 days."

8. *James Wilson*, goods guard two years: "I came " from Sighthill with the 2.25 p.m. goods train. We " lost time principally between Greenhill and Stirling. " We left Dunfermline at 8.20 p.m. with a load of 10 " waggons and a van. I and an assistant guard were " in the van. We were nearly stopped at the up " distant-signal, and ran through the station at about " 12 or 14 miles an hour. There had been an agree- " ment with the station-master that we were not to " stop at Cowdenbeath although timed to do so, as " there would never be anything for us to lift as I " understood, and we generally passed after the station " had been shut up. The rule is to stop, put on the " distant-signal, examine the siding to see if there " are any waggons to lift; if there are none, wave " the driver on, take off the signal and leave a fog " signal on the rails. The collision took me quite " unawares. I was not hurt, but my mate was " slightly hurt, he had not to leave his duty. Eight " of my waggons were damaged, some of them left " the rails."

Porter McGlasson (who was in charge of the signals when the collision occurred), was in custody awaiting his trial when I held the inquiry. He had acknowledged that he had neglected to put to danger the up distant-signal before allowing the down coal train to cross to the up line.

The immediate cause of this collision was the neglect of an inexperienced porter to put to danger the up distant-signal at Cowdenbeath station before he allowed the down coal train to cross to the up line. This act of neglect could not have occurred had the points and signals at this station been interlocked, and I consider that the very slow progress that is being made by the North British Company in introducing improved signal arrangements on their line is very reprehensible.

The collision would not have occurred had the driver of the up goods train obeyed the rule as to stopping at Cowdenbeath, where he was timed to stop, and was not waved past. There seems to have been great inattention to this rule on the Fifeshire lines.

The collision would have, perhaps, been attended with less serious consequences had the driver of the down coal train changed his head lights from green to red before crossing from the down to the up line, as the driver of the up goods train might then have sooner perceived the danger ahead.

This collision would also have been prevented had a proper system of block telegraph working been in force. Seeing, however, that this has not even yet been established on the important section of the North British line from Berwick to near Edinburgh, over which express trains are constantly running, it seems idle to hope for its introduction on the Fifeshire lines within any reasonable period.

I have, &c.,

C. S. Hutchinson,
Major-Gen. R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th February 1877.

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1876.

RETURN

OF

ACCIDENTS AND CASUALTIES

Which have been reported to the Board of Trade during the Months of

October, November, and December 1876.

CORRECTIONS

To the Return for the Quarter ending 30th September 1876.

Page 65.—Lancashire and Yorkshire. 20th September. Accident to —— Gilmore, Fireman, Rainford. This man subsequently died from the injury he received.

Pages 64–5.—Lancashire and Yorkshire. The remarks "Beyond his control" should have been placed against Henry Morris, 3rd July, and Eastwood, 11th September, and not against Sharples and Marshall, as printed.

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1877.

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No. 1. General Total.—Number of Persons reported as killed or injured on the Railways of the United Kingdom, distinguishing between Passengers, Servants of Railway Companies, and other Persons; and distinguishing also in the case of the two former Classes between Accidents happening from Causes beyond their own Control and Accidents happening otherwise - 1

No. 2. Number of Persons reported as killed or injured in the United Kingdom, distinguishing between Passengers, Servants of Railway Companies, and other Persons; and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - 2

No. 3. Number of Servants of Railway Companies and Contractors reported as killed or injured on the Railways in the United Kingdom, distinguishing the Number which have occurred on each Railway or System of Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury - - - - - 3

No. 4. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured in each Class of Accident - 5

No. 5. Accidents to Trains, Rolling-Stock, Permanent-Way, &c. on the Railways in the United Kingdom, distinguishing the different Classes of Accidents, the different Railways on which the same have occurred, and the Number of Passengers and others, and of Servants of Railway Companies, killed or injured on each Railway by those Accidents - - - 6

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General Summary of Accidents reported to the Board of Trade during the year 1876, with a Comparative Table showing the Numbers of Persons killed and injured on Railways from 1866 to 1876, both years inclusive.

I.—Accidents to Trains, Rolling-Stock, Permanent-Way, &c.

Accidents to trains, rolling-stock, permanent-way, &c. during the year 1876 caused the death of 65 persons, and injury to 1,486, viz.:—

	Killed.	Injured.
Passengers - - - - -	36	1,245
Servants of companies - - - -	28	236
Other persons - - - - -	1	5
Total - - - -	65	1,486

In the course of the year 1876 there were reported to the Board of Trade 57 collisions between passenger-trains or parts of passenger-trains, causing the death of 27 passengers and 1 company's servant and injury to 509 passengers, 39 servants, and 1 other person; 129 collisions between passenger-trains and goods or mineral-trains, engines, &c., by which 8 passengers and 2 servants were killed and 498 passengers and 55 servants injured; 57 collisions between goods-trains or parts of goods-trains, causing the death of 6 servants and injury to 3 passengers (men in charge of cattle), 49 servants, and 2 other persons; 124 cases of passenger-trains or parts of passenger-trains leaving the rails, causing the death of 8 servants and injury to 101 passengers, 25 servants, and 1 other person; 47 cases of goods-trains, or parts of goods-trains, engines, &c. leaving the rails, by which 2 servants were killed and 14 injured; 32 cases of trains or engines travelling in the wrong direction through points, causing injury to 24 passengers and 6 servants; 24 cases of trains running into stations or sidings at too high a speed, by which 64 passengers and 2 servants were injured and 1 other person was killed; 206 cases of trains running over cattle or other obstructions on the line, causing the death of 1 servant and injury to 5 passengers and 7 servants; 68 cases of trains running through gates at level-crossings, by which 2 servants were killed and 4 servants and 1 other person were injured; 13 cases of the bursting of boilers or tubes, &c. of engines, by which 5 servants were killed and 20 injured; 12 failures of the machinery of engines, by which 1 passenger was killed and 10 passengers and 1 servant were injured; 880 failures of tyres, resulting in injury to 1 passenger and 1 servant; 397 failures of axles, causing injury to 10 passengers and 5 servants; 4 failures of break-apparatus, causing injury to 1 passenger and 3 servants; 30 failures of couplings, causing the death of 1 servant and injury to 16 passengers and 4 servants; and 17 other miscellaneous accidents, by which 3 passengers and 1 servant were injured. There were also reported 1 collision between light-engines, 74 failures of wheels, 1 failure of a rope used in working an incline, 7 failures of tunnels, bridges, viaducts, culverts, &c., 464 broken rails, 22 cases of the permanent-way being damaged by floods, 19 slips in cuttings or embankments, 23 cases of fires in trains, and 3 cases of fires at stations, but in none of these instances was there any personal injury involved.

Of the 880 tyres which failed, 33 were engine-tyres, 21 tender-tyres, 18 carriage-tyres, 24 van-tyres, and 784 waggon-tyres; of the waggons 575 belonged to owners other than the railway companies; 135 tyres were made of steel, 706 of iron, and of the remaining 39 tyres the material was not reported; 1 tyre was fastened to its wheel by Brotherhood's patent, and 3 by Mansell's patent, and none of these left the wheels when they failed; 37 tyres were fastened by Beattie's patent, one of which flew from its wheel when it broke; 88 tyres were fastened by Gibson's patent method, and of these 3 flew off their wheels when they failed; 710 tyres were fastened to the wheels by rivets or bolts,—of these 63 fractured at rivet-holes, and 8 of them

flew off the wheels; 2 tyres had been simply shrunk on to their wheels, and both of them came off; and 1 other tyre which had been fastened by dovetail clips also flew off when it broke; the method of fastening was not reported in 38 cases; 593 tyres split longitudinally or bulged, and 35 fractures occurred at the weld.

Of the 397 axles which failed, 224 were engine-axles, viz., 195 crank or driving, and 29 leading or trailing; 16 were tender-axles, 9 carriage-axles, 140 waggon-axles, and 8 were axles of salt-vans; 45 waggons belonged to owners other than the railway companies; of the crank-axles 150 were made of iron, 37 of steel, and of the remaining 8 the material was not stated; the average mileage of 142 iron crank-axles was 148,655 miles, and of the 37 steel axles 98,847 miles.

Of the 464 rails which broke, 351 were double-headed, 105 single-headed, and the section of 8 was not given; 272 were iron rails, 168 steel rails, and the material of 24 was not reported; of the double-headed rails, 188 had been turned, 139 had not been turned, and in 24 cases the information was not given.

II.—Accidents to Passengers from their own want of Caution,* Persons passing over Railways at Level-Crossings, Trespassers, and Others.

From causes other than by accidents to trains, rolling-stock, &c. there were 103 passengers killed and 638 injured. Of these, 46 were killed and 116 injured by falling between carriages and platforms; 14 killed and 376 injured by falling on to platforms, ballast, &c., when getting into or out of trains; 33 killed and 32 injured whilst crossing the line at stations; 4 killed and 35 injured by falling out of carriages during the travelling of trains; 28 injured by the closing of carriage-doors; and 6 killed and 51 injured from other causes. Of other persons included in this section, 59 were killed and 30 injured whilst passing over railways at level-crossings,—viz., 46 killed and 24 injured at public level-crossings, 5 killed at foot-crossings, and 8 killed and 6 injured at occupation-crossings; 257 persons were killed and 134 injured when trespassing on railways; 48 persons committed suicide upon the various lines; whilst of other persons not specifically classed, but mostly private people having business on the Companies' premises, 68 were killed and 72 injured; making a total under this section of 535 persons killed and 874 injured.

III.—Accidents to Servants in the Employ of Railway Companies or Contractors.

During the year, and exclusive of those included in Part I., 645 servants of companies or contractors were killed and 2,364 injured.† Of these 85 were killed and 433 injured during shunting operations; 39 were killed and 186 injured by falling off engines, vans, waggons, &c.; 6 were killed and 47 injured by coming in contact with over-bridges, &c. during the travelling of trains; 8 were killed and 64 injured by coming in contact while shunting with vehicles, &c. standing on adjoining lines; 38 were killed and 227 injured whilst getting on or off trains, engines, &c.; 4 were killed and 81 injured whilst loading, unloading, or sheeting; 7 were killed and 140 injured whilst breaking, spragging, or chocking wheels; 4 were killed and 45 injured whilst working at cranes or capstans; 114 were killed and 173 injured whilst working on the permanent-way or in sidings; 22 were killed and 12 injured whilst walking along the line on the way home or to work; 193 were killed and 157 injured whilst walking, crossing, or standing on the line on duty; 28 were killed and 72 injured whilst passing between vehicles; 10 were killed and 103 injured whilst attending to the machinery of engines, cleaning them, &c.; 5 were killed and 2 injured whilst attending to gates at level-crossings; 21 were killed and 63 injured by falling or being caught between vehicles and platforms; 2 were killed and 27 injured by falling off ladders, scaffolds, or platforms; 62 were injured by the falling of lamps, waggon-doors, timber, weights, &c.; 53 were killed and 348 injured whilst coupling or uncoupling waggons; and 6 were killed and 122 injured by miscellaneous accidents.

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* Thirty-six accidents to passengers included in this part of the Summary occurred from causes beyond the persons' own control, but the accidents are of such a description that they cannot properly come under section I.

† Fifteen of these were returned as having been killed and 148 injured from causes beyond their own control.

Altogether, the numbers of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the year 1876, as reported to the Board of Trade, were as follows:—

	Killed.	Injured.
Passengers:		
From causes beyond their own control	38	1,279
From their own misconduct or want of caution	101	604
Servants of companies or contractors:		
From causes beyond their own control	43	384
From their own misconduct or want of caution	630	2,216
Persons passing over railways at level-crossings	59	30
Trespassers (including suicides)	305	134
Other persons not coming in above classification	69	77
Total	1,245	4,724

Note.—In addition to the above the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents to 40 persons killed and 1,389 injured, which occurred upon their premises during the year 1876, namely:—3 passengers killed and 27 injured by falling down steps at stations, and 2 passengers killed and 47 injured from other causes whilst upon the companies premises; 13 persons killed and 42 injured while transacting business in connection with the railways; and 23 servants killed and 1,272 injured whilst engaged upon various duties in warehouses, goods-yards, sheds, and other places.

Thus the total numbers reported to the Board of Trade by the several railway companies during the year 1876 amount to 1,286 persons killed and 6,112 injured.

Numbers of Passengers, Servants of Companies or of Contractors, and other Persons Killed or Injured on Railways open for Traffic in England and Wales, Scotland, and Ireland, with a Total for the United Kingdom, from 1866 to 1876, both inclusive.

—	England and Wales.												Scotland.										Ireland.										Total, United Kingdom.									
	Passengers.				Servants of Companies or of Contractors.				Other Persons.		Total.		Passengers.				Servants of Companies or of Contractors.				Other Persons.		Total.		Passengers.				Servants of Companies or of Contractors.				Other Persons.		Total.		Passengers.				Servants of Companies or of Contractors.				Other Persons.		Total.	
	From Causes beyond their own Control.		From their own Misconduct or want of Caution.		From Causes beyond their own Control.		From their own Misconduct or want of Caution.		Whilst passing over Railways at Level Crossings, Trespassers, Suicides, and Miscellaneous.				From Causes beyond their own Control.		From their own Misconduct or want of Caution.		From Causes beyond their own Control.		From their own Misconduct or want of Caution.		Whilst passing over Railways at Level Crossings, Trespassers, Suicides, and Miscellaneous.				From Causes beyond their own Control.		From their own Misconduct or want of Caution.		From Causes beyond their own Control.		From their own Misconduct or want of Caution.		Whilst passing over Railways at Level Crossings, Trespassers, Suicides, and Miscellaneous.				From Causes beyond their own Control.		From their own Misconduct or want of Caution.		From Causes beyond their own Control.		From their own Misconduct or want of Caution.		Whilst passing over Railways at Level Crossings, Trespassers, Suicides, and Miscellaneous.			
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1866	14	515	10	6	15	65	47	5	48	5	134	596	1	25	4	–	1	5	26	3	16	–	48	33	–	–	2	1	1	–	10	3	20	1	33	5	15	540	16	7	17	70	83	11	84	6	215	634
1867	15	578	13	6	12	51	50	19	48	6	138	660	1	81	4	2	3	6	31	6	13	1	52	96	3	30	–	–	–	5	9	3	7	1	19	39	19	689	17	8	15	62	90	28	68	8	209	795
1868	39	464	14	4	14	44	39	12	44	4	150	528	–	31	7	–	3	2	23	5	14	1	47	39	1	24	1	2	2	1	2	1	9	5	15	33	40	519	22	6	19	47	64	18	67	10	212	600
1869	15	891	20	15	16	68	97	43	104	20	252	1,037	2	104	1	1	5	19	26	4	12	2	46	130	–	48	1	1	1	9	6	5	15	2	23	65	17	1,043	22	17	22	96	129	52	131	24	321	1,232
1870	61	994	15	8	18	87	45	10	53	10	192	1,109	4	56	6	1	4	19	37	–	17	3	68	79	1	34	3	1	3	12	8	1	11	3	26	51	66	1,084	24	10	25	118	90	11	81	16	286	1,239
1871	6	691	34	48	15	111	149*	140*	94	31	298	1,021	2	71	7	1	2	21	33	32	31	8	75	133	4	83	4	2	1	16	13	3	9	3	31	107	12	845	45	51	18	148	195*	175*	134	42	404	1,261
1872	13	1,086	90	200	56	321	456*	864*	315	146	930	2,617	10	151	11	9	5	49	95*	145*	47	29	168	383	1	10	2	6	3	6	17*	10*	24	6	47	38	24	1,247	103	215	64	376	568*	1,019*	386	181	1,145	3,038
1873	37	1,285	101	191	39	246	581	641	360	150	1,118	2,513	3	212	17	33	11	39	125	223	59	34	215	541	–	25	2	4	2	9	15	13	20	5	39	56	40	1,522	120	228	52	294	721	877	439	189	1,372	3,110
1874	67	1,416	111	335	65	401	576	2,003	355	214	1,174	4,459	17	161	11	18	16	42	112	254	55	21	211	496	2	36	3	15	2	7	17	18	15	10	39	86	86	1,613	125	368	83	540	705	2,275	425	245	1,424	5,041
1875	14	1,110	92	565	28	474	601	2,823	326	290	1,061	5,262	3	86	13	26	8	28	112	262	52	35	188	437	1	16	11	3	3	12	13	19	13	6	41	56	18	1,212	116	594	39	514	726	3,104	391	331	1,290	5,755
1876†	37	1,076	93	564	34	325	515	1,941	357	205	1,036	4,111	–	185	4	33	8	44	98	255	63	29	173	546	1	18	4	7	1	15	17	20	13	7	36	67	38	1,279	101	604	43	384	630	2,216	433	241	1,245	4,724†

* The great increase in these numbers over those of the preceding years is to be attributed to the fact that previous to the passing of the Regulation of Railways Act, 1871, which came into operation on the 1st November 1871, many railway companies did not make returns of accidents to their servants.

† See Note to the General Summary for the year, page v.

Summary for the Months of October, November, and December 1876.

Part I.—Accidents to Trains, Rolling-Stock, Permanent-Way, &c.

Accidents to trains, rolling-stock, permanent-way, &c. during the months of October, November, and December, caused the death of 12 persons and injury to 379, viz. :—

	Killed.	Injured.
Passengers	8	321
Servants of companies	4	58
Total	12	379

During the three months there were reported 10 collisions between passenger-trains or parts of passenger-trains, by which 37 passengers and 1 company's servant were injured; 38 collisions between passenger-trains and goods or mineral-trains, engines, &c., causing the death of 8 passengers and 2 servants and injury to 235 passengers and 27 servants; 11 collisions between goods-trains or parts of goods-trains, causing injury to 11 servants; 22 cases of passenger-trains or parts of passenger-trains leaving the rails, causing injury to 14 passengers and 4 servants; 10 cases of goods-trains, or parts of goods-trains, engines, &c. leaving the rails, by which 1 servant was injured; 3 cases of trains or engines travelling in the wrong direction through points, causing injury to 15 passengers and 4 servants; 3 cases of trains running into stations or sidings at too high a speed, by which 4 passengers were injured; 60 cases of trains running over cattle or other obstructions on the line, causing injury to 1 passenger and 4 servants; 26 cases of trains running through gates at level-crossings, by which 1 servant was killed and 1 injured; 2 cases of the bursting of boilers or tubes of engines by which 1 servant was killed and 2 servants were injured; 133 failures of axles, resulting in injury to 1 servant; 8 failures of couplings, causing injury to 15 passengers and 1 servant; and 5 other miscellaneous accidents, by which 1 servant was injured. There were also reported 2 failures of the machinery of engines, 401 failures of tyres, 29 failures of wheels, 2 failures of bridges, 127 broken rails, 16 cases of the permanent-way being damaged by floods, 11 slips in cuttings or embankments, and 2 cases of fires in trains, but in none of these was there any personal injury involved.

Of the 401 tyres which failed, 15 were engine-tyres, 1 was a tender-tyre, 4 were carriage-tyres, 11 were van-tyres, and 370 were waggon-tyres; of the waggons 264 belonged to owners other than the railway companies; 42 of the tyres were made of steel, and 355 of iron, the material of the remainder not being stated; 29 of the tyres were fastened to their wheels by Gibson's patent method, and 2 of these flew off the wheel when they broke; 19 were fastened by Beattie's patent, and 1 by Brotherhood's patent, but none of these left the wheel; 348 tyres were fastened to the wheels by bolts or rivets, of these 34 broke at rivet-holes, and 1 of them flew off the wheel when it failed; 2 tyres were simply shrunk on to their wheels, and both of them came off when they failed; in 2 cases the mode of fastening was not stated; 287 of the tyres split longitudinally or bulged, and in 26 cases the tyres fractured at the weld.

Of the 133 axles which failed, 73 were engine-axles, viz., 62 crank or driving, and 11 leading or trailing, 2 were tender-axles, 1 was a carriage-axle, 53 were waggon-axles, and 4 were axles of salt-vans; 18 wagons, including the salt-vans, belonged to owners other than the railway companies. Of the 62 crank and driving-axles, 50 were made of iron and 12 of steel. The average mileage of 47 of the iron axles was 156,994 miles, and of the 12 steel axles 113,563.

Of the 127 rails which broke, 101 were double-headed, 23 were single-headed, and of 3 the section was not stated; of the double-headed rails 53 had previously been turned, 38 had not been turned, and in 10 cases the information was omitted; 59 rails were made of iron, and 64 of steel, and the material of the remaining 4 was not stated.

Part II.—Accidents to Passengers from their own want of Caution,* Persons passing over Railways at Level-Crossings, Trespassers, and Others.

From causes other than accidents to trains, rolling-stock, &c. there were 32 passengers killed and 154 injured. Of these 12 were killed and 32 injured by falling between carriages and platforms; 6 were killed and 95 injured by falling on to platforms, ballast, &c., when getting into or alighting from trains; 9 were killed and 7 injured when passing over the line at stations; 3 were killed and 5 injured by falling out of carriages during the travelling of trains; 3 were injured by the closing of carriage-doors; and 2 were killed and 12 injured through other causes. Of other persons included in this part of the Return, 13 were killed and 7 injured whilst passing over railways at level-crossings, viz., 9 killed and 6 injured at public level-crossings, 3 killed and 1 injured at occupation-crossings, and 1 killed at a foot-crossing; 67 persons were killed and 38 injured when trespassing on the railways; 16 persons committed suicide on railways; whilst of other persons not specifically classed, but mostly private people having business on the Companies' premises, 11 were killed and 22 injured.

Part III.—Accidents to Servants in the Employ of Railway Companies or Contractors.

During the three months there were 171 servants of companies or contractors killed and 627 injured,† exclusive of those included in Part I. Of these 28 were killed and 107 injured during shunting operations; 5 were killed and 50 injured by falling off engines, vans, waggons, &c.; 3 were killed and 9 injured by coming in contact with over-bridges, &c. during the travelling of trains; 4 were killed and 22 injured by coming in contact, whilst shunting, with vehicles, &c., standing on adjoining lines; 10 were killed and 58 injured when getting on or off trains or engines; 1 was killed and 22 were injured whilst loading or unloading goods or sheeting waggons; 3 were killed and 33 injured whilst breaking, spragging, or chocking wheels; 2 were killed and 18 injured whilst working at cranes or capstans; 33 were killed and 29 injured whilst working on the permanent-way or in sidings; 4 were killed and 6 injured whilst walking along the line on the way home or to work; 49 were killed and 45 injured whilst walking, crossing, or standing on the line on duty; 4 were killed and 19 injured whilst passing between vehicles; 3 were killed and 31 injured whilst attending to the machinery of engines, cleaning them, &c.; 2 were killed and 1 injured whilst attending to gates at level-crossings; 2 were killed and 27 injured by falling or being caught between vehicles and platforms; 1 was killed and 2 were injured by falling off ladders, scaffolds, or platforms; 9 were injured by the falling of lamps, waggon doors, timber, weights, &c.; 14 were killed and 114 injured whilst coupling or uncoupling vehicles; and 3 were killed and 25 injured from various other causes.

Altogether, the numbers of persons killed and injured on railways in the United Kingdom in the course of public traffic during the months of October, November, and December 1876, as reported to the Board of Trade, were as follows:—

	Killed.	Injured.
Passengers:		
From causes beyond their own control	10	330
From their own misconduct or want of caution	30	145
Servants of companies or contractors:		
From causes beyond their own control	6	101
From their own misconduct or want of caution	169	584
Persons passing over railways at level-crossings	13	7
Trespassers (including suicides)	83	38
Other persons not coming in above classification	11	22
Total	322	1,227

Note.—In addition to the above the Railway Companies have reported to the Board of Trade, in pursuance of the 6th section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, namely,—12 passengers injured by falling down steps at stations, and 21 passengers injured by stumbling on platforms or from other causes; 6 persons killed and 20 injured whilst transacting business on the Companies' premises; and of servants of companies or contractors, 4 killed and 341 injured whilst engaged upon their duties in warehouses, goods-yards, and other places.

* Eleven of the accidents to passengers included in this part of the Return occurred from causes beyond the persons' own control, but the accidents are of such a description that they cannot be properly included in Part I.

† Two of these were returned as having been killed and 43 injured from causes beyond their own control.

TABLE No. 1.

General Total.

Number of Persons reported, during the Months of October, November, and December 1876, as Killed or Injured on the Railways of the United Kingdom, distinguishing between Passengers, Servants of Railway Companies, and Other Persons; and distinguishing also in the case of the Two former Classes between Accidents happening from Causes beyond their own Control and Accidents happening otherwise.

—	Passengers.						Servants of Companies or of Contractors.						Other Persons.								Total all Classes.	
	From Causes beyond their own Control.		From their own Misconduct or Want of Caution.		Total.		From Causes beyond their own Control.		From their own Misconduct or Want of Caution.		Total.		Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.		Total.			
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
England and Wales - -	9	293	30	129	39	422	6	80	137	512	143	592	12	7	71	31	6	17	89	55	271	1,069
Scotland - - -	–	29	–	13	–	42	–	13	28	64	28	77	–	–	10	6	4	4	14	10	42	129
Ireland - - -	1	8	–	3	1	11	–	8	4	8	4	16	1	–	2	1	1	1	4	2	9	29
Total for the United Kingdom	10	330	30	145	40	475	6	101	169	584	175	685	13	7	83	38	11	22	107	67	322	1,227

TABLE No. 2.

[NUMBER of PERSONS reported, during the Months of October, November, and December 1876, as KILLED or INJURED on the Railways in the UNITED KINGDOM, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

| | | PASSENGERS. | | |

TABLE No. 3.

Number of Servants of Railway Companies and Contractors reported, during the Months of October, November, and December 1876, as Killed or Injured on the Railways in the United Kingdom, distinguishing the Number which have occurred on each Railway or System of Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

Name of Company.	From accidents to trains, &c. *See* Table No. 5.		During shunting operations.		Falling off engines, vans, waggons, &c.		Coming in contact with overbridges, &c. during the travelling of trains.		Coming in contact while shunting with vehicles, &c. standing on adjoining lines.		Getting on or off trains, engines, &c.		Whilst loading, unloading, or sheeting.		Whilst breaking, spragging, or chocking wheels.		Whilst working at cranes or capstans.		Whilst working on the permanent way or in sidings.		Whilst walking along the line on the way home, or to work.		Whilst walking, crossing, or standing on the line.		Whilst passing between vehicles.		Whilst attending to the machinery of engines, cleaning them, &c.		Whilst attending to gates at level-crossings.		Falling or being caught between vehicles and platforms.		Falling off ladders, scaffolds, platforms, &c.		By falling of lamps, waggon-doors, timber, weights, &c.		Whilst coupling or uncoupling waggons.		Miscellaneous.		Total.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES.																																						
Cheshire Lines	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1
Furness	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	5
Great Eastern	–	2	1	13	–	1	–	1	–	–	–	2	–	1	–	1	–	2	–	1	1	4	1	2	–	1	–	1	–	1	–	1	–	1	2	5	8	18
Great Northern	–	1	1	1	–	–	–	1	–	1	–	5	–	2	–	5	–	1	3	7	1	1	3	6	–	1	–	2	–	1	–	1	–	1	1	6	14	19
Great Western	–	5	3	13	1	10	–	2	–	4	1	8	–	5	–	9	–	5	1	5	4	7	3	10	–	5	–	5	–	2	–	1	–	1	1	20	15	102
Isle of Wight	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	1	–	1	–	2	–	1	–	–	–	1	–	1	–	1	–	1	–	1	–	–	2	–
Lancashire and Yorkshire	–	7	2	17	1	7	–	–	1	1	–	9	–	5	–	5	1	5	3	2	–	1	4	3	–	5	–	7	–	1	–	2	–	17	–	–	15	111
Lancashire and Yorkshire and London and North-Western Joint	–	–	–	1	–	1	–	–	–	–	–	9	–	1	1	3	–	2	2	2	–	–	10	13	–	1	–	4	–	1	–	1	–	1	–	1	26	134
London and North-Western	–	11	5	21	1	9	–	1	1	6	3	9	–	9	1	3	1	8	2	2	–	1	2	3	–	1	–	2	–	1	–	1	–	1	–	1	6	26
London and North-Western and Great Western Joint	–	–	–	3	–	1	–	–	–	1	–	1	–	1	–	1	–	1	1	7	–	1	2	3	–	1	–	1	–	1	–	1	–	1	1	6	7	8
London and South-Western	–	–	4	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	1	–	1	–	1	–	1	–	1	–	1	7	25
London, Brighton, and South Coast	–	1	–	9	–	3	–	1	–	1	2	1	1	1	–	1	–	1	–	2	–	1	2	2	–	1	–	1	–	1	–	1	–	1	2	1	3	6
London, Chatham, and Dover	–	1	1	1	–	1	–	1	–	1	1	1	–	5	–	1	–	1	2	1	–	1	3	3	–	1	–	1	–	2	–	1	–	1	–	3	6	26
Manchester, Sheffield, and Lincolnshire	–	6	–	3	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	1	–
Manchester, South Junction, and Altrincham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	–	–	–	2	1
Metropolitan and St. John's Wood	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	–	–	–	2	1
Metropolitan District	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	2	–	–	–	1	–	1	–	–	–	1	–	1	–	1
Midland	–	1	2	5	–	3	–	1	–	2	–	7	–	3	1	1	–	2	–	2	–	–	2	4	–	1	–	1	–	1	–	1	–	1	–	1	16	42
Monmouthshire	–	1	–	2	–	1	–	–	–	–	–	5	–	2	–	8	–	–	–	1	–	–	1	2	–	1	–	1	–	1	–	1	–	1	–	1	9	61
North Eastern	–	1	1	4	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	3	–	1	–	1	–	1	–	1	–	1	–	1	2	1
North London	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	1	–	1	–	1	–	1	–	1	–	1	2	1
North Staffordshire	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	1	–	1	–	1	–	1	–	1	–	1	–	1
North Union	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

[*Continued on next page.*

TABLE No. 3.—Number of Servants reported as Killed or Injured, &c.—*continued.*

NAME OF COMPANY.	From accidents to trains, &c.		During shunting operations.		Falling off engines, vans, waggons, &c.		Coming in contact with overbridges, &c. during the travelling of trains.		Coming in contact while shunting with vehicles, &c. standing on adjoining lines.		Getting on or off trains, engines, &c.		Whilst loading, unloading, or sheeting.		Whilst breaking, spragging, or chocking wheels.		Whilst working at cranes or capstans.		Whilst working on the permanent way or in sidings.		Whilst walking along the line on the way home, or to work.		Whilst walking, crossing, or standing on the line.		Whilst passing between vehicles.		Whilst attending to the machinery of engines, cleaning them, &c.		Whilst attending to gates at level-crossings.		Falling or being caught between vehicles and platforms.		Falling off ladders, scaffolds, platforms, &c.		By falling of lamps, waggon-doors, timber, weights, &c.		Whilst coupling or uncoupling waggons.		Miscellaneous.		TOTAL.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES—*continued.*																																						
Rhymney	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Sheffield and Midland Committee	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	2	3	
Somerset and Dorset	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	1	–	2	3	
South-Eastern	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Wrexham, Mold, and Connah's Quay	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	
TOTAL, ENGLAND AND WALES	4	39	23	98	4	43	1	7	3	19	8	52	1	22	3	29	2	17	24	21	3	6	42	44	4	17	3	28	2	1	2	21	1	1	–	8	10	95	3	24	143	592
SCOTLAND.																																						
Caledonian	–	6	1	2	–	–	1	–	–	2	–	3	–	–	–	1	–	1	6	1	–	–	2	–	–	1	–	1	–	–	–	–	–	1	–	1	2	6	–	–	12	26
Dundee East Joint Station	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	1
Glasgow and Paisley Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Glasgow and South Western	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	3	–	–	2	–	–	–	–	–	–	–	–	–	–	–	1	3	–	–	3	8
Glasgow, Barrhead, and Kilmarnock Joint	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Great North of Scotland	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Highland	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
North British	–	7	1	5	1	6	–	–	1	1	1	1	–	–	–	2	–	–	3	3	1	–	3	–	–	1	–	1	–	–	–	5	–	–	–	–	6	–	–	11	38
TOTAL, SCOTLAND	–	13	4	8	1	6	1	1	1	3	1	6	–	–	–	3	–	1	9	8	1	–	7	1	–	2	–	2	–	–	–	5	–	1	–	1	3	15	–	1	28	77
IRELAND.																																						
Belfast and Northern Counties	–	5	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	6
Dundalk, Newry, and Greenore	–	1	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2
Great Northern of Ireland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	–	1	2
Great Southern and Western of Ireland	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Midland Great Western of Ireland	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	2	–	–	1	4
Waterford and Central Ireland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
TOTAL, IRELAND	–	6	1	1	–	1	1	1	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	1	4	–	–	4	16
TOTAL, UNITED KINGDOM	4	58	28	107	5	50	3	9	4	22	10	58	1	22	3	33	2	18	33	29	4	6	49	45	4	19	3	31	2	1	2	27	1	2	–	9	14	114	3	25	175	685

TABLE No. 4.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., reported, during the Months of October, November, and December 1876, as having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

	ENGLAND AND WALES.							SCOTLAND.							IRELAND.							TOTAL, UNITED KINGDOM.						
	No.	Number of Passengers and others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Collisions between passenger trains or parts of passenger trains	9	–	36	–	1	–	37	1	–	1	–	–	–	1	–	–	–	–	–	–	–	10	–	37	–	1	–	38
Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line	28	7	216	2	19	9	235	9	–	11	–	3	–	14	1	1	8	–	5	1	13	38	8	235	2	27	10	262
Collisions between goods trains or parts of goods trains	9	–	–	–	6	–	6	2	–	–	–	5	–	5	–	–	–	–	–	–	–	11	–	–	–	11	–	11
Collisions between light engines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Passenger trains or parts of passenger trains leaving the rails	17	–	14	–	3	–	17	1	–	–	–	–	–	–	4	–	–	–	1	–	1	22	–	14	–	4	–	18
Goods trains or parts of goods trains, engines, &c. leaving the rails	7	–	–	–	1	–	1	3	–	–	–	–	–	–	–	–	–	–	–	–	–	10	–	–	–	1	–	1
Trains or engines travelling in the wrong direction through points	3	–	15	–	4	–	19	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	15	–	4	–	19
Trains running into stations or sidings at too high a speed	2	–	1	–	–	–	1	1	–	3	–	–	–	3	–	–	–	–	–	–	–	3	–	4	–	–	–	4
Trains running over cattle or other obstructions on the line	47	–	1	–	2	–	3	10	–	–	–	2	–	2	3	–	–	–	–	–	–	60	–	1	–	4	–	5
Trains running through gates at level crossings	26	–	–	1	1	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	26	–	–	1	1	1	1
The bursting of boilers or tubes, &c. of engines	2	–	–	1	2	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	1	2	1	2
The failure of machinery, springs, &c. of engines	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–
" " tyres	385	–	–	–	–	–	–	14	–	–	–	–	–	–	2	–	–	–	–	–	–	401	–	–	–	–	–	–
" " wheels	28	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	29	–	–	–	–	–	–
" " axles	105	–	–	–	–	–	–	25	–	–	–	1	–	1	3	–	–	–	–	–	–	133	–	–	–	1	–	1
" " break apparatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
" " couplings	6	–	2	–	–	–	2	2	–	13	–	1	–	14	–	–	–	–	–	–	–	8	–	15	–	1	–	16
" " ropes used in working inclines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
" " tunnels, bridges, viaducts, culverts, &c.	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–
Broken rails	93	–	–	–	–	–	–	34	–	–	–	–	–	–	–	–	–	–	–	–	–	127	–	–	–	–	–	–
The flooding of portions of permanent way	5	–	–	–	–	–	–	8	–	–	–	–	–	–	3	–	–	–	–	–	–	16	–	–	–	–	–	–
Slips in cuttings or embankments	5	–	–	–	–	–	–	4	–	–	–	–	–	–	2	–	–	–	–	–	–	11	–	–	–	–	–	–
Fire in trains	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–
Fire at stations, or involving injury to bridges or viaducts	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Other accidents	3	–	–	–	–	–	–	2	–	–	–	1	–	1	–	–	–	–	–	–	–	5	–	–	–	1	–	1
	–	7	285	4	39	11	324	–	–	28	–	13	–	41	–	1	8	–	6	1	14	–	8	321	4	58	12	379

TABLE No. 5.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. on the Railways in the UNITED KINGDOM, reported during the Months of October, November, and December 1876, distinguishing the different CLASSES of ACCIDENTS, the different RAILWAYS on which the same have occurred, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains, and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Collisions between light engines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.	The failure of wheels.	The failure of axles.	The failure of break apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes	
																										Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES.																														
Brecon and Merthyr	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cambrian	–	–	–	–	1	–	–	–	2	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cockermouth, Keswick, and Penrith	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
East and West Junction	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Festiniog	–	–	–	–	–	1	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Furness	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Eastern	1	2	–	–	1	–	–	–	7	13	–	–	2	–	4	–	–	–	–	1	–	–	1	–	–	–	13	–	2	–	1
Great Northern	–	2	–	–	1	–	–	–	1	–	–	–	1	–	4	–	–	–	–	8	–	–	–	–	–	4	119	2	1	6	12
Great Western	–	2	–	–	4	–	–	–	6	3	1	–	74	12	31	–	–	–	1	6	5	3	–	–	–	–	5	–	5	–	1
Lancashire and Yorkshire	2	3	3	–	2	–	–	1	7	1	–	–	4	–	5	–	2	–	–	3	–	–	–	–	1	3	20	–	7	3	2
London and North-Western	3	8	1	–	1	–	3	–	8	5	–	–	29	–	15	–	3	–	–	14	–	–	–	–	–	–	83	–	11	–	6
London and North-Western and Great Western Joint	1	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	–	–	–	–	–	–	–
London and South Western	–	1	1	–	–	–	–	–	–	–	–	–	1	–	3	–	–	–	–	8	–	–	–	–	–	–	1	–	3	–	–
London, Brighton, and South Coast	–	2	–	–	–	1	–	–	–	1	–	–	1	–	5	–	1	–	–	20	–	–	–	–	–	–	3	–	1	–	–
London, Chatham, and Dover	–	1	1	–	1	–	–	–	–	1	–	–	2	–	1	–	–	–	1	6	–	–	–	–	–	–	1	–	–	–	–
London, Tilbury, and Southend	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20	–	–	–	5
Manchester, Sheffield, and Lincolnshire	–	2	1	–	–	–	–	–	1	–	–	–	2	1	7	–	–	–	–	1	–	–	–	–	1	–	9	–	6	–	1
Maryport and Carlisle	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Metropolitan	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
Metropolitan & St. John's Wood	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Metropolitan District	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
Midland	–	1	–	–	1	–	–	–	–	–	–	–	–	–	3	–	–	–	–	14	–	–	–	–	–	–	5	–	1	–	–
Monmouthshire	–	1	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6	–	1	–	–
Neath and Brecon	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Northampton and Banbury Junction	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North-Eastern	–	2	–	–	2	–	–	–	12	–	1	–	1	–	7	–	–	–	–	3	–	1	1	–	–	–	–	1	1	1	1
North London	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
North Staffordshire	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
Sheffield and Midland Committee	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–

TABLE No. 5.—Number of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*continued.*

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains, and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Collisions between light engines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.	The failure of wheels.	The failure of axles.	The failure of break apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations, or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
																										Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES—*continued.*																														
Somerset and Dorset	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
South-Eastern	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Wrexham, Mold, and Connah's Quay	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–
Private Owners of Vehicles	–	–	–	–	–	–	–	–	–	–	–	–	264	15	14	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, ENGLAND AND WALES	9	28	9	–	17	7	3	2	47	26	2	1	385	28	105	–	6	–	2	93	5	5	2	–	3	7	285	4	39	11	324
SCOTLAND.																														
Caledonian	1	2	1	–	–	–	–	–	7	–	–	–	12	–	11	–	–	–	–	13	6	2	–	–	2	–	9	–	6	–	15
Glasgow and Paisley Joint	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Glasgow and South-Western	–	2	–	–	–	2	–	–	1	–	–	1	–	–	1	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–
Glasgow, Barrhead, and Kilmarnock Joint	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Great North of Scotland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Highland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North British	–	4	1	–	1	1	–	1	1	–	–	–	2	1	8	–	2	–	–	18	1	2	–	–	–	–	19	–	7	–	26
Private Owners of Vehicles	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, SCOTLAND	1	9	2	–	1	3	–	1	10	–	–	1	14	1	25	–	2	–	–	34	8	4	–	–	2	–	28	–	13	–	41
IRELAND.																														
Belfast and County Down	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–
Belfast and Northern Counties	–	1	–	–	1	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	8	–	5	1	13
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Dundalk, Newry, and Greenore	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1
Great Northern of Ireland	–	–	–	–	1	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Great Southern and Western	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Waterford and Limerick	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, IRELAND	–	1	–	–	4	–	–	–	3	–	–	–	2	–	3	–	–	–	–	–	3	2	–	–	–	1	8	–	6	1	14
TOTAL, UNITED KINGDOM	10	38	11	–	22	10	3	3	60	26	2	2	401	29	133	–	8	–	2	127	16	11	2	–	5	8	321	4	58	12	379

PART I.

RETURN of ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., on the several SYSTEMS of RAILWAYS in the UNITED KINGDOM, which have been reported to the BOARD OF TRADE during the Months of October, November, and December 1876, with the NUMBER of PERSONS KILLED or INJURED thereby.

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876 :	**Brecon and Merthyr.**				
9 Oct. -	The engine, tender, and four waggons of a goods-train left the rails at the indicator points close to Bedwas station. No one was hurt, nor was any damage done. It was supposed that the points had been partly open through something having got between them, but nothing could be found to show what actually was the cause of the accident - - -	–	–	–	–
13 Oct. -	The leading-wheels of the engine of a mineral train left the rails at Pant station, throwing 12 loaded trucks off the line. The road at the place in question was said to have been a little out of gauge, thus causing the accident. The line was blocked for about three hours - - -	–	–	–	–
	Cambrian.				
9 Nov. -	A mixed passenger and goods train came into collision with a cow straying on the line between Forden and Welshpool stations, by which seven waggons were thrown off the line, and slight damage done to the permanent way - - - - - - - -	–	–	–	–
12 Dec. -	The engine of a passenger-train left the rails at a pair of facing-points in approaching Towyn station. No damage was done, nor any one hurt. *This accident has been inquired into by Colonel Rich, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 -	–	–	–	–
	Cockermouth, Keswick, and Penrith.				
27 Nov. -	A waggon belonging to the London and North-Western Company, loaded with pig iron, left the rails when travelling between Cockermouth and Embleton stations, and a few chairs were broken. The accident occurred in consequence of a bent axle. *See also page* 45 - -	–	–	–	–
	East and West Junction.				
26 Dec. -	As a passenger-train was entering Ettington station, the engine and two leading vehicles left the rails at the facing-points at the east end of the loop. No one was hurt. The signal and point-bolt appeared to work properly, and it was thought that the heavy snow and sleet which prevailed at the time of the accident clogged the switch, and prevented the point fitting close against the stock rail - - - - -	–	–	–	–
	Festiniog.				
3 Oct. -	The door of an empty waggon opened and came in contact with an iron support in the tunnel near Tanygrisiau, throwing the waggon off the road, and breaking several chairs. No one was injured - -	–	–	–	–
11 Oct. -	Seven empty slate-waggons and two loaded coal waggons ran away from Duffws station into the stop-block placed on the rails at Glanypwll Junction, about a mile from Duffws station. No one was injured, but the slate-waggons were a good deal damaged, likewise the fencing and walls on the side of the line ; the coal-waggons kept the line and were not damaged. The accident was caused by the shunting-guard not properly securing the waggons by spragging the wheels - -	–	–	–	–
19 Oct. -	A goods-engine ran into the stop-block at Duffws station, and was thrown from the line and slightly damaged, as was also the permanent-way -	–	–	–	–

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**Great Eastern.**				
31 Oct. -	At Newport station a truck-load of straw caught fire, and the truck was damaged. The fire was supposed to have been caused by a spark from the engine - - - - - - - - -	–	–	–	–
3 Nov. -	While a passenger-train from Liverpool Street to Brentwood was standing at the Canal Box signal, Devonshire Street, waiting for permission to proceed, it was run into at the rear by a train of waggons. Six passengers complained of being injured, and the buffers of two carriages and two vans were damaged. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - -	–	6	–	–
10 Nov. -	A passenger-train, when entering the Enfield station, came into collision with a train of empty carriages, from which the passengers had just got out. Two passengers complained of injury, and some slight damage was done to rolling-stock. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - - - -	–	2	–	–
11 Nov. -	A passenger-train ran into a ballast-train which was slowly travelling between Manor sidings and Stamford Hill station. Two passengers and the engine-driver of the passenger-train were injured, and there was some damage done to the rolling-stock. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - -	–	2	–	1
14 Nov. -	A passenger-train ran through the gates of the Baylham level-crossing, and a piece of the broken wood struck the gateman and broke his ankle. The gateman had allowed a cart to pass too close upon the approach of the train and was opening the gates too late - - - -	–	–	–	1
19 Nov. -	As a passenger-train was leaving the Victoria Park joint station the last vehicle left the rails at the points leading from the up to the down line, and righted itself at an angle crossing about 190 yards in advance. Three passengers complained of injury. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - -	–	3	–	–
	Total, Great Eastern - - -	–	13	–	2
	Great Northern.				
10 Oct. -	A passenger-train from Doncaster came into collision at Lincoln with a goods-train belonging to the Manchester, Sheffield, and Lincolnshire Company. Four passengers complained of injury, and the rolling-stock was damaged. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 - - - - - - - -	–	4	–	–
23 Dec. -	In the process of shunting a goods-train across the down-line at Arlesey siding station two waggons got off the rails, and, blocking the road, were run into by an express train from King's Cross to Manchester. Three passengers were killed, another subsequently died from the effects of his injuries, and 115 are alleged to have been injured. The engine-driver and fireman of the passenger-train were both killed in jumping or dropping from the engine before the collision, and the guard in the leading-van was knocked down and stunned. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - -	4	115	2	1
28 Dec. -	In consequence of the spring of the engine breaking, a passenger-train which was running from Firsby to Spilsby left the rails when about 400 yards from the Firsby junction. No one was injured - - -	–	–	–	–
	Total, Great Northern - - -	4	119	2	1
	Great Western.				
2 Oct. -	As the second portion of an express passenger-train from Bristol was leaving that station it came into collision with some cattle trucks at North Somerset Junction. The trucks were slightly damaged, but no one was injured. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 - - - - - - -	–	–	–	–

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**Great Western—*cont.***				
9 Oct. -	As a mixed-train from Bridport was running near Toller station three carriages and five trucks left the rails. No one was injured. The cause of the accident could not be ascertained - - - -	–	–	–	–
16 Oct. -	As a mixed-train from Kington was running between Titley and Lyon's Hill a break-van and a truck left the rails. No one was injured. Both vehicles and the permanent-way were slightly damaged. The accident was attributed to the road being a little wide to gauge, and the ganger was punished - - - - - - - - -	–	–	–	–
19 Oct. -	As the Plymouth portion of a passenger-train from Exeter was entering the Newton station it was turned on to the Torquay Branch, instead of on to the main line, and the signalman, on discovering his error, altered the points as the train was passing over them, thus causing one carriage to leave the rails. The carriage and permanent-way were slightly damaged but no one was injured - - - - - -	–	–	–	–
27 Oct. -	When a passenger-train from Didcot was running into Swindon station it came into collision with a goods-train which was shunting. No one was injured and very little damage was done. The accident was attributed to the engine-driver of the passenger-train running past the signals whilst they were at danger - - - - - - -	–	–	–	–
6 Nov. -	One of the axles of a waggon broke near Witham and caused four other vehicles to leave the rails. *See also page* 43 - - - -	–	–	–	–
9 Nov. -	One of the tubes of an engine burst at Taunton, and the driver had his face scalded - - - - - - - - -	–	–	–	1
28 Nov. -	One of the axles of a waggon belonging to Mr. D. L. Owen broke near Swansea and caused the vehicle to leave the rails. *See also page* 47 -	–	–	–	–
5 Dec. -	The break-van of a goods-train left the rails at Portishead Junction through running over a piece of timber which had fallen from the train. Two guards riding in the van were injured, and the break-van, two waggons, and the permanent-way were damaged - - - -	–	–	–	2
16 Dec. -	The wing-wall of an over-bridge between Evershot and Yetminster fell on the line and blocked it both ways - - - - - -	–	–	–	–
27 Dec. -	As a passenger-train was running between Calne and Chippenham the engine, van, and two carriages left the rails. Five passengers and two servants were injured, and the rolling-stock and permanent-way were damaged. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - - - - - -	–	5	–	2
	Total, Great Western - - -	–	5	–	5
	Lancashire and Yorkshire.				
12 Oct. -	While some empty carriages were being shunted at Pepper Hill two of them left the rails and fouled the main line. Single-line was then worked, and a passenger-train from Manchester to Bolton ran into a passenger-train from Bolton to Manchester which was standing at the Robin Hood junction. Five passengers were shaken and the engine-driver of the train from Manchester was injured. *This accident has been inquired into by Colonel Rich, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 - - - - -	–	5	–	1
12 Oct. -	As a passenger-train was leaving the Victoria Station, Manchester, the last carriage left the rails in consequence of its coming in contact with a sprag which was lying on the line, and which had been forgotten by the shunter. One passenger complained of having been shaken - -	–	1	–	–
14 Oct. -	At Southport a train from Liverpool was allowed to run too quickly against a carriage standing in the station against the buffers. One passenger complained of injury, but did not give his name. No damage was sustained by the rolling-stock - - - - - - -	–	1	–	–
30 Oct. -	A cattle-train standing on the main line at Brierfield near Burnley was run into by a passenger-train. Three butchers riding in a van attached to the cattle-train were killed and two others injured. The driver, fireman, and nine passengers in the passenger-train were also injured. The engine of the passenger-train and some of the cattle-waggons were damaged. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 - - - - - - - - -	3	11	–	2

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**Lancashire and Yorkshire—*cont.***				
11 Nov. -	A special goods-train ran into another goods-train at Lostock Hall. No one was injured, but three or four waggons were damaged. The accident occurred in consequence of the signal showing an imperfect light, the lever working it having been broken - - - - -	–	–	–	–
19 Nov. -	As a passenger-train was passing Windsor Bridge station it came in contact with a waggon of straw which was being shunted into a siding. No one was stated to be injured; a third-class carriage was damaged - -	–	–	–	–
25 Nov. -	The side-lamp of a passenger-train came into contact with a passing goods-train at Hope Street, Salford. The side-lamp was torn off and a waggon sheet damaged - - - - - - - - -	–	–	–	–
28 Nov. -	A special goods-train ran into a cattle-train which had been shunted on to the up main-line for a passenger-train to pass it, at Summerseat. The buffers of the engines were damaged, but no one was hurt. The cattle-train should have been placed in the siding, the pointsman erred in giving "line clear," and the engine-driver of the goods-train ran past the distant and home signals whilst they were at "danger" - -	–	–	–	–
28 Nov. -	An engine rejoined its train too quickly at Crosby, and one of the passengers was slightly shaken - - - - - - - -	–	1	–	–
2 Dec. -	A train of empty waggons belonging to the London and North-Western Company ran into the rear of a Lancashire and Yorkshire coal-train which had become detached from the front portion in consequence of the failure of a draw-bar at Dark Lane Crossing, Mirfield. No one was hurt, but two or three waggons were damaged - - - - -	–	–	–	–
2 Dec. -	A coal-train and a goods-train came into collision at Facit Junction, Rochdale, and three servants were shaken, both engines damaged, and one van and two waggons smashed. It was said that the engine-driver of the goods-train ran past the signals at danger - - - - -	–	–	–	3
5 Dec. -	As an engine was crossing the line at Bradford it was run into by a Great Northern passenger-train, just leaving the station, the engine-driver of which had disregarded signals. A guard had his head cut - -	–	–	–	1
13 Dec. -	Three waggons attached to a passenger-train broke loose between Freshfield and Formby, and ran into the train at Marshall's siding between Formby and Ainsdale. One passenger complained of being shaken. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - -	–	1	–	–
23 Dec. -	The engine of a passenger-train struck the points when entering the Exchange station, Liverpool, and left the rails, dragging with it the first vehicle of the train. The points were under repair at the time of the accident. No one was hurt, nor any damage done - - - -	–	–	–	–
	Total, Lancashire and Yorkshire -	3	20	–	7
	London and North-Western.				
6 Oct. -	As a train of empty waggons was proceeding from Ardwick station to London Road station, Manchester, it was run into at the rear by a goods-train which came off the Lancashire and Yorkshire branch from Miles Platting, at the Buxton Street junction, and four of the empties were thrown off the rails and fell against the parapet-wall of the viaduct, knocking about 25 yards of it into the street below. A passenger-train belonging to the Manchester, Sheffield, and Lincolnshire Company, which left Ardwick junction before the collision between the two goods-trains occurred just in front of it, ran into the branch goods-train, and knocked three trucks off the rails. No one was hurt in either collision. *This accident has been inquired into by Colonel Rich, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 -	–	–	–	–
9 Oct. -	A passenger-train from Liverpool ran into the Stockport station at too high a speed, and came into collision with another passenger-train which was standing at the platform. No one appears to have been injured. A post-office tender was damaged and a window of a carriage was broken -	–	–	–	–
10 Oct. -	As a passenger-train was passing the goods-junction at Derby, it came in contact with the engine of a Midland Company's ballast-train, which was foul of the main line. The step-boards of a break-van and three carriages were slightly damaged, but no one was hurt - - - -	–	–	–	–

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876:	**London and North-Western**—*cont.*				
10 Oct. -	An excursion-train ran into a goods-train at Bletchley station, and forty passengers and one servant were hurt, and there was also some damage done to the rolling-stock. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 - - - - - -	–	40	–	1
10 Oct. -	As a goods-train was travelling past Blackrock three waggons were thrown off the road, and considerably damaged by a bale of cloth falling off a waggon, and getting under the wheels - - - - -	–	–	–	–
14 Oct. -	As a passenger-train was standing at the mouth of the tunnel at Lime Street station, Liverpool, the engine was detached and run into a siding; the train should then have been placed in an adjoining siding, but, owing to a mistake of the signalman, it ran into the same siding as the engine with which it came into collision. Three passengers (a man and his wife and child) were slightly shaken - - - - - -	–	3	–	–
9 Nov. -	As a passenger-train was standing at the Milverton station, Leamington, a light engine came into collision with it. Three passengers were returned as having been shaken. The accident was stated to have occurred in consequence of a porter omitting to alter the points after the passenger-train had passed through them - - - - - - -	–	3	–	–
10 Nov. -	Whilst Messrs. Oakes and Co.'s colliery-waggon was ascending the Middleton Incline (Cromford and High Peak Line) the draw-bar broke, and the waggon ran back through the safety-points and was overturned. It was damaged, and an incline pulley broken - - - - -	–	–	–	–
14 Nov. -	As an up express-train was passing Wolverton station, it came into very severe collision with an up coal-train. Twelve passengers and six servants were injured, and a considerable amount of damage was done to rolling-stock. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - - - - - -	–	12	–	6
20 Nov. -	As a mixed-train of goods and passenger vehicles was leaving Holland Arms Station (Anglesea Central Railway), instead of travelling on the main-line it took the siding-rails, and the engine came slightly in contact with the 'earth stop-block at the end of the rails, and a guard and two platelayers were slightly shaken. The engine had put some waggons in the siding, and after it returned to the train the points were not altered - - - - - - - - -	–	–	–	3
20 Nov. -	As a special-train consisting of an engine, carriage, and break-van was approaching Tredegar Station the pointsman moved the hand-point immediately the engine had passed over, causing the carriage to leave the rails and to be thrown on its side. No one was reported to have been hurt, nor any damage done - - - - - - -	–	–	–	–
21 Nov. -	As a passenger-train was entering Willesden Junction it came into slight contact with a passenger-train which was standing in No. 1 bay, and two buffer-castings of the engine were broken and the break-van damaged. The signalman turned the in-coming train into the wrong bay. No one was hurt - - - - - - -	–	–	–	–
22 Nov. -	A passenger-train when travelling through Madeley station ran into a milk-truck which was being pushed across the line. The engine was slightly damaged, but no further injury was sustained by the train, and no person was hurt. *This accident has been inquired into by Colonel Rich, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - - - - - -	–	–	–	–
23 Nov. -	As two waggons were descending the Bunsal Incline on the Cromford and High Peak Line they became detached from the main-rope and ran into the catch-pit. The waggons were damaged, the pulley-frame broken, and the bell-signal connexion injured - - - - - -	–	–	–	–
9 Dec. -	As a passenger-train was travelling past Spring's Branch it came slightly in contact with a waggon which had got off the rails in a siding and fouled the main-line. The engine and carriages were slightly damaged and the permanent-way was displaced, but no one was hurt - -	–	–	–	–
9 Dec. -	As a passenger-train was approaching the platform at Edge Hill station it became divided through the failure of a carriage drawbar which broke at a defective weld, and the two parts came into collision. One passenger was slightly shaken - - - - - - - -	–	1	–	–
20 Dec. -	As a passenger-train was travelling near the junction at Monument Lane it came in slight contact with a goods-train. The engine-driver of the passenger-train received instructions before starting from Monument Lane station to stop at the junction signal, but did not do so in time to avert the collision - - - - - - - -	–	–	–	–

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**London and North-Western**—*cont.*				
21 Dec. -	As a local passenger-train was standing near St. Helen's station an express-train came very slightly in contact with the rear of it, and eight passengers were shaken. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - -	–	8	–	–
23 Dec. -	When a goods-train was standing at the platform at Burnside a passenger-train came in contact with it and four passengers were shaken. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - -	–	4	–	–
27 Dec. -	As a passenger-train was emerging from the south end of Primrose Hill tunnel it was turned into the goods-yard at Chalk Farm and came into collision with a shunting-engine. Twelve passengers and a fireman were injured. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - - - - - -	–	12	–	1
	Total, London and North-Western -	–	83	–	11
	London and North-Western and Great Western Joint.				
31 Dec. -	As a passenger-train from Worcester was running into Barrs Court station, Hereford, it came into collision with an empty passenger-train which was being backed out. No one was injured, nor was any damage done -	–	–	–	–
	London and South-Western.				
13 Nov. -	As a passenger-train was passing the Nine Elms goods-yard at a speed of about 30 miles an hour the engine came into collision with a goods-truck which had fouled the main-line on being thrown from a shunting-line running parallel to the main-line on which the passenger-train was travelling. One passenger complained of injury, and the guard in the leading-van had his wrist slightly hurt. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - -	–	1	–	1
13 Dec. -	A goods-train ran too fast into a siding, near Petersfield, for the purpose of fetching out some waggons, and came into collision with them, damaging the engine and several waggons. A guard and porter were injured -	–	–	–	2
	Total, London and South-Western -	–	1	–	3
	London, Brighton, and South Coast.				
2 Oct. -	A passenger-train became divided at Anerley in consequence of a draw-bar hook and the side chains of a first-class carriage giving way. There was slight damage to the rolling-stock, but no one appears to have been hurt. The accident was caused through the engine-driver putting on steam before the guards' breaks had been taken off - - -	–	–	–	–
10 Dec. -	An engine during shunting operations at Norwood junction ran into a catch-siding past the end of the [rails on to] the ballast work of the bridge carrying the railway over the Portland road. One of the girders of the bridge gave way, and part of the engine sank through the bridge. The engine-driver had one of his arms fractured. *This accident has been inquired into by Colonel Yolland, and his Report will be published in Part 9th of Inspecting-Officers' Reports*, 1876 - -	–	–	–	1
23 Dec. -	As a passenger-train from London Bridge was running into Victoria station it came into collision with an engine which was standing on the line. Three passengers complained of injury. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - -	–	3	–	–
27 Dec. -	A horse-box was blown out of a siding foul of the main-line at Steyning, and a passenger-train came into collision with it. There was slight damage done to rolling-stock, but no one was hurt - - -	–	–	–	–
	Total, London, Brighton, and South Coast -	–	3	–	1

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**London, Chatham, and Dover.**				
13 Oct. -	As the 10.40 p.m. passenger-train for the Crystal Palace was leaving the Victoria station it came into collision with an empty composite carriage, which, having been left unsecured by the shunter, had run out of the road. The carriage was thrown against another carriage which was standing in a siding, and both left the rails, blocking the outgoing line of rails, and a Midland Company's train, when leaving the station, had to proceed on the in-coming line, when the engine of this train left the rails at the points owing to the rods working them having been broken by the first accident. One passenger complained of injury. *This accident has been inquired into by Colonel Volland, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 - -	–	1	–	–
18 Nov. -	A goods-train from Dover was not pulled up in time to prevent its coming into collision with a train of empty trucks which was drawing out of a siding at Faversham. No one was injured. The rolling-stock and the platform were damaged. The signals were against the goods-train -	–	–	–	–
21 Dec. -	Child's Bridge, carrying a roadway over the Maidstone Branch between Kemsing and Otford junction stations, fell in and entirely blocked the line. The bridge was known to be unsafe, and precautions were taken to prevent accident - - - - - - - -	–	–	–	–
	Total, London, Chatham, and Dover -	–	1	–	–
	London, Tilbury, and Southend.				
6 Dec. -	Two passenger trains came into collision at Upper Abbey Mills Junction. Twenty passengers have complained of injury, and the rolling-stock and permanent-way were considerably damaged. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - -	–	20	–	–
	Manchester, Sheffield, and Lincolnshire.				
26 Oct. -	A goods-train came into collision with a fish-train which was standing at Crowden station. The guard of the goods-train was injured on his head and arm, and an engine and eight waggons were damaged - -	–	–	–	1
30 Oct. -	A passenger-train came into slight collision with a threshing-machine at Thornton. No one was hurt, and no damage appeared to have been done to the train. The machine was being taken over the line at a level-crossing, when one of the chains got fast into the rails - -	–	–	–	–
10 Nov. -	As a passenger-train was passing Brancliffe lime quarries, near Shireoaks, a blast was fired, and a stone weighing about 4½ lbs. fell upon a third-class carriage, and went through the roof; the passengers, although alarmed, were not injured - - - - - -	–	–	–	–
15 Nov. -	A down passenger-train from Doncaster to Penistone came into collision with an up coal-train at Hexthorpe; eight passengers and the guards of the two trains were injured. Both engines and several waggons were damaged. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - - - - -	–	8	–	2
2 Dec. -	A passenger-train came into slight collision at Retford with three loaded waggons which were left on the main-line, and the engine-driver, fireman, guard, and one passenger were slightly injured, and some damage was done to the rolling-stock - - - - - -	–	1	–	3
	Total, Manchester, Sheffield, and Lincolnshire -	–	9	–	6
	Metropolitan and St. John's Wood.				
9 Dec. -	Whilst a down-train was waiting at St. John's Wood Road station—the crossing station—for an up train to pass it, the up train was run into the station on the down-line, in consequence of the signalman having altered the points before the train arrived, and came into collision with the down-train which was waiting there; no one was hurt, but both the engines and one carriage in each train were damaged. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - -	–	–	–	–

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**Metropolitan District.**				
21 Oct. -	An empty engine left the rails at Earl's Court station, and struck the up-platform, which it displaced, blocking both roads and delaying the traffic for upwards of four hours. The cause of the accident was not known -	–	–	–	–
	Midland.				
22 Nov. -	As an express train was approaching the Heeley station the wheels of the leading bogie-truck of a Pullman car (the third vehicle behind the tender) dropped in between the rails, and the five vehicles behind the Pullman car also left the rails. Five passengers complained of injury, and the guard of the train was also injured. *This accident has been inquired into by Captain Tyler, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - - - -	–	5	–	1
30 Nov. -	As the Scotch express was passing Hollis Bridge siding near Chesterfield station it came into slight collision with a waggon which was foul of the main-line. No one was hurt, nor any damage done. Shunting operations were being performed in the yard, and it was supposed that the waggon struck the points - - - - - -	–	–	–	–
	Total, Midland - -	–	5	–	1
	Monmouthshire.				
14 Oct. -	As a mineral-train was running from Bassaleg to Newport the engine mounted the rails at a crossing-point near the east end of Tredegar Park. The engine was damaged, and the permanent-way was torn up; twenty-six rail-chairs, two rails, and fifty keys were broken - -	–	–	–	–
2 Nov. -	On the arrival of a mineral-train from Aberbeeg to Newport at the Abercarne Colliery Junction the engine was detached and turned into the Colliery Junction for the purpose of picking up some waggons of coal, the remainder of the train being left standing on the main-line, and whilst standing there it was run into by a mineral-train from Ebbw Vale to Newport. No one was injured; an engine, break-van, and nine waggons were damaged. A fog prevailed at the time of the collision -	–	–	–	–
19 Dec. -	When a coal-train was waiting at Bassaleg station for a Brecon and Merthyr passenger-train to pass, it was run into by a passenger-train belonging to the London and North-Western Company. Six passengers and a guard were injured. *This accident has been inquired into by Colonel Rich, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - - - - -	–	6	–	1
	Total, Monmouthshire -	–	6	–	1
	Neath and Brecon.				
27 June -	A van belonging to the London and North-Western Company, loaded with tin, which formed part of a passenger-train, got off the rails about five miles from Brecon, owing to one of its axles breaking. The van was considerably damaged, and a number of chairs in the permanent-way were broken. *See also page* 44 - - - - -	–	–	–	–
	Northampton and Banbury Junction.				
16 Oct. -	The piston-rod of the engine of a passenger-train broke about three quarters of a mile from Towcester station. There was no damage done, but the train was delayed about three hours - - - -	–	–	–	–

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876:	**North-Eastern.**				
6 Oct. -	As a passenger-train from Newcastle was approaching the Citadel station at Carlisle, the engine, tender, and leading-wheels of the guard's-van left the rails at a pair of facing-points about twenty yards from the platform	–	–	–	–
11 Oct. -	About 9 p.m. a landslip occurred in a cutting at the east end of Beelah Viaduct, near Barras, causing the up-line to be blocked some time -	–	–	–	–
20 Oct. -	On the arrival of a train at Escrick it was necessary to place a horse-box, which formed part of the train, in one of the sidings connected with the up-line. The train was accordingly shunted into the siding for that purpose, and when about to return to the main-line the guard omitted to hold a pair of points, and two of the carriages were in consequence thrown off the rails. No one was injured - - -	–	–	–	–
8 Nov. -	A passenger-train ran over and killed two horses which had strayed on to the line near Brafferton, causing a third-class carriage to leave the rails. A few chairs were broken - - - - - - -	–	–	–	–
9 Nov. -	As a passenger-train was approaching West Hartlepool station it came into collision with a set of timber-trucks which were being drawn into the Bond-yard. No person complained of injury. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 8th of Inspecting Officers' Reports*, 1876 - -	–	–	–	–
16 Nov. -	The mail-train due to leave Ferryhill at 5.20 a.m. overtook and came into collision with a mineral-train within the distant-signal at the Cemetery Junction, Hartlepool. No damage was done, and the passengers in the train were not aware that anything unusual had occurred - -	–	–	–	–
29 Nov. -	As an up goods-train was proceeding near Picton Junction a waggon containing empty crates and boxes was observed to be on fire, having, it is supposed, been ignited by sparks from a passing engine - - -	–	–	–	–
12 Dec. -	As a goods-train was leaving West Hartlepool, the boiler of the engine gave way and the engine-driver and fireman were scalded, the latter fatally. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th, of Inspecting Officers' Reports*, 1876 - - - - - - - - -	–	–	1	1
	Total, North-Eastern -	–	–	1	1
	Somerset and Dorset.				
24 Oct. -	A van attached to a passenger-train left the road between Blandford and Spetisbury owing to the axle-guard having broken - - -	–	–	–	–
21 Dec. -	A down passenger-train over-ran the platform at Blandford station, and struck the rear of an up goods-train in passing the loop line, causing slight damage to rolling-stock - - - - - - -	–	–	–	–
	Wrexham, Mold, and Connah's Quay.				
4 Dec. -	As an engine was propelling five waggons from Northop Hall siding to Watkinson's siding, they came into collision with the gates at Castle Brick level-crossing, and the waggons were thrown off the rails, damaging the signal and telegraph wires. The head-guard who had been riding on the leading waggon was killed. The distant-signal of the crossing was down and the gateman was absent from his duty - - - -	–	–	1	–
4 Dec. -	Two waggons ran out of a private siding and came into collision with an engine on the main-line, between Etna siding and Old Ewloe siding. No person was injured, but the engine was damaged. The slip point had been blocked over by some person in the employ of the owner of the private siding - - - - - - - -	–	–	–	–
	Total, Wrexham, Mold, and Connah's Quay -	–	–	1	–
	Total, England and Wales - - -	7	285	4	39

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
	SCOTLAND.				
1876:	**Caledonian.**				
3 Oct. -	When a special-horse-box-train from Perth to Glasgow was running between Greenloaning and Kinbuck the leading-axle of the engine broke and the train ran fully one thousand five hundred yards before it was brought to a stand-still. The driver jumped off and had one of his hands cut and his knee injured. The permanent-way was damaged. *See also page* 48 -	–	–	–	1
16 Oct. -	As a passenger-train was leaving Dubton, a porter who was pushing a platform barrow to its usual standing-place, left the barrow before it had come to a stand, and it ran to the end of the platform and came into contact with a composite carriage which formed part of the train. The carriage was thrown off the rails, a footstep and coupling were broken, and the barrow was smashed to pieces - - - - -	–	–	–	–
18 Oct. -	When an engine was passing under a bridge in course of construction by the North British Railway Company between Whifflet Junction and Quarter Ironworks, the tender got entangled with a rope used in the building operations, in consequence of which one of the storm-board windows was broken, and a breaksman had his face and neck injured -	–	–	–	1
20 Nov. -	While an empty engine was on its way to Brownlee Colliery it came into collision with the engine of a mineral-train. The second breaksman of the mineral-train had his chest bruised - - - - - -	–	–	–	1
2 Dec. -	A passenger-train, when drawing up at Southfield Junction, came into collision with a mineral-train. Five passengers were injured and slight damage was done to rolling-stock. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - -	–	5	–	–
8 Dec. -	Some carriages which had been detached from a passenger-train at Carstairs station came into collision with the train in consequence of the break-carriage not being able to control them, and one passenger was hurt. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - - - - - -	–	1	–	–
20 Dec. -	A goods-train ran into a mixed-train at Kirriemuir Junction and three passengers and the engine-driver, fireman, and guard of the latter train were injured. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - - - - - -	–	3	–	3
	Total, Caledonian - - - -	–	9	–	6
	Glasgow and Paisley Joint.				
28 Dec. -	A mineral-waggon left the rails when being backed to a goods-train at Pollok Junction, thereby fouling the other main-line, and a passenger-train came into collision with it. No one was hurt, but there was some damage done to the rolling-stock. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - -	–	–	–	–
	Glasgow and South-Western.				
23 Oct. -	A loaded mineral-waggon in a train from Kilmarnock to Dumfries got off the rails in passing Auldgirth station, and grazed a passenger-train going in an opposite direction. Some waggons in the mineral-train were smashed, and the permanent-way was considerably damaged - - - -	–	–	–	–
30 Oct. -	A waggon belonging to the Eglinton Iron Company, in a mineral-train running towards Kilmarnock, left the rails a few yards on the Mauchline side of the crossing into the Ross siding near Hurlford station, drawing five other waggons after it. Four waggons belonging to the Iron Company were badly broken and two of the railway company's waggons slightly damaged, and the point-rods were also damaged - - - - -	–	–	–	–

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**Glasgow and South-Western**—*cont.*				
8 Nov. -	The right-hand coupling-rod of a passenger-train engine broke near Holywood station. The gangway and trail-splasher-plate were slightly damaged, and eighteen chairs broken. The rod was made of the best Yorkshire iron, and had run 98,243 miles - - - - -	–	–	–	–
16 Nov. -	A passenger-train from Glasgow shortly after passing Howood new station came into collision with a mineral-train which was standing on the line. No one complained of injury, and only the buffer-beam of the van of the mineral-train was broken. The accident occurred in consequence of the guard of the latter train not protecting it whilst it was obliged to travel at a very slow rate, owing to the greasy state of the rails -	–	–	–	–
8 Dec. -	An engine ran off from Hawkhill coaling-siding and came into collision with an empty passenger-train standing in Ayr station, in consequence of the breaking of the fulcrum-stud of the regulating-valve of the engine. The break-van was destroyed, a composite carriage was knocked from its frame, other carriages were destroyed and the verandah of the station was damaged, but no one was hurt. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - -	–	–	–	–
	North British.				
28 Sept. -	A passenger-train when entering Milngavie station ran against the stop-buffers with some little force, owing to the fireman failing to apply his break. Three passengers were returned as having been injured -	–	3	–	–
5 Oct. -	As a passenger-train was passing Queen Street station, Glasgow, a rail broke, causing one carriage, a guard's break-van and an incline-break truck to leave the rails. No person injured. One rail, one sleeper, and eighty chairs broken. *See also page 57* - - - - -	–	–	–	–
17 Oct. -	A passenger-train when entering the Waverley station, Edinburgh, came into collision with some waggons which were foul of a crossing. Two passengers were supposed to have been slightly injured, and the steps and footboards of four carriages were damaged. The accident was caused by the engine-driver of the passenger-train disregarding a signal when it was at danger - - - - - - - - -	–	2	–	–
18 Oct. -	A landslip occurred in a cutting about a mile to the west of Oakley station, and a special cattle-train ran into it. The engine-driver was injured on his head and the guard had one of his legs bruised - - -	–	–	–	2
25 Oct. -	The bank at the side of a cutting near Trinity Junction, Edinburgh, slipped, and caused twenty feet of the retaining-wall to fall on to the outside rail of the down-line - - - - - - -	–	–	–	–
10 Nov. -	A spring of a waggon running in a goods-train gave way between Winchburgh and Broxburn Junction, and caused the waggon to leave the rails and foul the opposite line. A passenger-train ran into the obstruction at reduced speed, but kept the rails, and no one was injured - -	–	–	–	–
8 Dec. -	A passenger-train came into slight collision with a goods-train at South Leith, and one passenger was shaken. The engine-driver of the passenger-train disregarded a danger signal - - - -	–	1	–	–
11 Dec. -	A passenger-train became parted when approaching Abbeyhill Junction near Edinburgh, and the rear portion ran down the Leith and Granton Branch, where it came into collision with a break-van and engine. Thirteen passengers and the guard of the passenger-train were injured, and three carriages and a van were damaged. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - -	–	13	–	1
20 Dec. -	As a coal-train was being shunted from the down to the up-line at Cowdenbeath station, it was run into by another goods-train. The driver and fireman of each train were injured. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - - -	–	–	–	4
21 Dec. -	As a goods-train was approaching Waverley station, Edinburgh, the draw-bar of a waggon came out and the rear portion of the train ran back until it was stopped by the driver of a following passenger-train -	–	–	–	–
28 Dec. -	As a passenger-train was passing Reston Junction, it grazed a waggon which was standing foul of the line. No one was injured, the footboards of two carriages were torn off - - - - - - -	–	–	–	–
	Total, North British -	–	19	–	7
	Total Scotland -	–	28	–	13

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
	IRELAND.				
1876:	**Belfast and County Down.**				
25 Nov. -	The rear portion of a mixed-train left the rails near the sixth mile post from Belfast. Some waggons and the permanent-way were damaged, but no one was hurt. The accident occurred on a piece of new road which had been disturbed by floods - - - - - - -	–	–	–	–
	Belfast and Northern Counties.				
2 Oct. -	A passenger-train, from Belfast to Ballymena, consisting of engine, tender, and two carriages, ran off the rails at the points entering Cookstown Junction station and stopped sixty yards from the switches. No one was hurt. *This accident has been inquired into by Major-General Hutchinson, and his Report will be published in Part 7th of Inspecting Officers' Reports*, 1876 - - - - - - - - -	–	–	–	–
26 Dec. -	An up passenger-train came into collision with a down goods-train near Moylena siding, between Antrim and Dunadry stations. One passenger was killed and eight passengers and five servants of the Company were injured, there was also some damage to rolling-stock. *This accident has been inquired into by Colonel Rich, and his Report will be published in Part 9th of Inspecting Officers' Reports*, 1876 - - -	1	8	–	5
	Total, Belfast and Northern Counties - - -	1	8	–	5
	Dundalk, Newry, and Greenore.				
14 Nov. -	As a passenger-train from Greenore to Newry was travelling between Carlingford and Omeath stations it left the rails in consequence of the mountain-stream having overflowed the line during heavy rains. A fireman was injured and a goods-van and the permanent-way were damaged, the latter considerably - - - - - - - -	–	–	–	1
	Great Northern Railway of Ireland.				
27 Dec. -	In consequence of the heavy rains a landslip occurred in a cutting about two miles on the Clones side of Smithborough station. Both lines were obstructed, and the night mail ran into the débris, four vehicles in the train leaving the rails in consequence. No one was injured; the rolling-stock and permanent-way were slightly damaged - - - -	–	–	–	–
	Total, Ireland - - - -	1	8	–	6

RETURN of the FAILURES of TYRES reported to the BOARD OF TRADE by the several RAILWAY COMPANIES during the Months of October, November, and December 1876.

ENGLAND AND WALES.

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Cambrian.**
1 August -	Upon examination of a train at Banbury on the Great Western Railway a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
	Festiniog.
8 December -	As a slate-train was travelling near Portmadoc, the tyre of one of the wheels of a waggon came off. No one was hurt, but the permanent-way was damaged. The tyre was made of Bowling iron by Messrs. Caine & Co., Liverpool, and was simply shrunk on to the wheel. The waggon had been running for seven years, and there was no flaw or crack in the tyre, which had been reduced by wear from $\frac{3}{4}$ inch to $\frac{1}{2}$ inch in the tread.
	Furness.
6 May - -	Upon examination of a goods-train at Preston on the London and North-Western Railway a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld; it did not leave the wheel.
3 November -	On examination at Barrow a passengers'-luggage-van was found to have a broken tyre. The tyre was made of Barrow steel by the Barrow Hematite Iron and Steel Company, and was put on the wheel on November 11th, 1875. It was fastened on to the wheel with four rivets; it fractured in the solid, and did not leave the wheel.
	Great Eastern.
6 October -	A break-van in a goods-train was found to have a broken tyre at Bury St. Edmunds. The tyre was made of steel, it was fastened on to the wheel by screw-studs and a lip; it fractured at a bolt-hole, but did not leave the wheel.
22 December -	As a passenger-train was approaching Norwich station the right hand driving-wheel tyre of the engine broke. The tyre was made of steel by the Monkbridge Iron Company, was fastened to the wheel by studs, and had run up to the date of the accident 160,492$\frac{1}{4}$ miles; it remained on the wheel.
	Great Northern.
20 November -	The tyre of one of the driving-wheels of an engine was found broken at Dunstable. It was made of steel by the Monkbridge Iron Company, Leeds, was fastened to the wheel by bolts, fractured transversely at a bolt hole, and remained on the wheel. The tyre had run 64,775 miles.
	Great Western.
2 July - -	Upon examination of a train at Swindon a fractured tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured at the weld; it did not leave the wheel.
4 July - -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split nine inches in the flange; it did not leave the wheel.
8 July - -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
12 July - -	Upon examination at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split eight inches longitudinally; it did not leave the wheel.
13 July - -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter meat-van. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split nine inches longitudinally; it did not leave the wheel.
19 July - -	Upon examination of a train at Newton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
19 July - -	Upon examination of a train at Reading a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 12 inches longitudinally; it did not leave the wheel.

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Great Western—*cont.***
19 July - -	Upon examination of a train at Bridgwater a split tyre was discovered under a South Devon waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 15 inches longitudinally; it did not leave the wheel.
24 July - -	Upon examination of a train at Oxford a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 11 inches longitudinally; it did not leave the wheel.
24 July - -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split 10 inches longitudinally; it did not leave the wheel.
28 July - -	Upon examination of a train at Bridgwater a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split 14 inches longitudinally; it did not leave the wheel.
28 July - -	Upon examination of a train on the Limestone Branch a fractured tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and had one transverse fracture at the weld; it did not leave the wheel.
30 July - -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split eight inches longitudinally; it did not leave the wheel.
31 July - -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 12 inches longitudinally; it did not leave the wheel.
31 July - -	A bulged tyre was found under a Bristol and Exeter waggon at Newton Abbott. It was of iron, fastened by rivets, and bulged six inches longitudinally; it did not leave the wheel.
1 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 14 inches longitudinally; it did not leave the wheel.
2 August -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split nine inches longitudinally; it did not leave the wheel.
2 August -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
5 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 12 inches longitudinally; it did not leave the wheel.
9 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a South Devon waggon. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split eight inches longitudinally; it did not leave the wheel.
9 August -	Upon examination of a train at Reading a split tyre was discovered under a truck. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by Gibson's patent, and split 14 inches longitudinally; it did not leave the wheel.
9 August -	Upon examination of a train at Taunton two loose tyres were discovered under a Bristol and Exeter meat-van.
10 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron; was fastened to the wheel by bolts, and split 14 inches longitudinally; it did not leave the wheel.
10 August -	Upon examination of a train at Reading a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 10 inches longitudinally; it did not leave the wheel.
11 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a South Devon waggon. The tyre was of iron, was fastened to the wheel by Gibson's patent, and split 10 inches longitudinally; it did not leave the wheel.
11 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a waggon. The tyre was of iron, was fastened to the wheel by bolts, and split 14 inches longitudinally; it did not leave the wheel.
14 August -	Upon examination at Swindon a bulged tyre was found under a waggon. It was of iron, fastened by Gibson's patent, and bulged 22 inches longitudinally; it did not leave the wheel.
16 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
17 August -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split 12 inches longitudinally; it did not leave the wheel.
23 August -	Upon examination of a train at Gloucester a split tyre was discovered under a break-van. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
23 August -	Upon examination of a train at Taunton a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 12 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Great Western—*cont.***
24 August -	Upon examination of a train at Taunton a split tyre was discovered under a South Devon waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 8 inches longitudinally; it did not leave the wheel.
28 August -	Upon examination of a train at Bridgwater a fractured tyre was discovered under a Bristol and Exeter waggon. The tyre was of iron, was fastened to the wheel by bolts, and had one transverse fracture; it did not leave the wheel.
29 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split 14 inches longitudinally; it did not leave the wheel.
31 August -	Upon examination of a train at Bridgwater a split tyre was discovered under a first-class carriage. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by Gibson's patent, and split 14 inches longitudinally; it did not leave the wheel.
6 September -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split 10 inches longitudinally; it did not leave the wheel.
9 September -	Upon examination of a train at Gloucester a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
11 September -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter first-class carriage. The tyre was made of iron, was fastened to the wheel by rivets, and split 8 inches longitudinally; it did not leave the wheel.
12 September -	Upon examination of a train at Reading a fractured tyre was discovered under the engine "Nero." The tyre was made of Bessemer steel by Messrs. J. Brown & Co., was fastened to the wheel by Gibson's patent, and had one transverse fracture; it did not leave the wheel.
13 September -	Upon examination of a train at Hockley a split tyre was discovered under a timber truck. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
21 September -	Upon examination of a train at Bridgwater a split tyre was discovered under a waggon. The tyre was of iron, was fastened to the wheel by Gibson's patent, and split 16 inches longitudinally; it did not leave the wheel.
22 September -	Upon examination of a train at Moreton-in-Marsh a split tyre was discovered under a waggon. The tyre was made of iron, and fastened to the wheel by rivets, but the maker was unknown; it did not leave the wheel.
4 October -	Upon examination of a train at Didcot a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
9 October -	Upon examination of a train at Aberdare a fractured tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and had one transverse fracture; it did not leave the wheel.
11 October -	Upon examination of a train at Stourbridge a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 24 inches longitudinally; it did not leave the wheel.
13 October -	Upon examination of a train at Reading a split tyre was discovered under a waggon. The tyre was made of iron by the Lowmoor Company, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
14 October -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 14 inches longitudinally; it did not leave the wheel.
16 October -	Upon examination of a train at Stourbridge a fractured tyre was discovered under a waggon. The tyre was made of steel by Messrs. Bessemer & Co., was fastened to the wheel by Gibson's patent, and had one transverse fracture; it did not leave the wheel.
16 October -	Upon examination of a train at Bridgwater a split tyre was discovered under a South Devon meat-van. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 11 inches longitudinally; it did not leave the wheel.
19 October -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron by Messrs. Lloyd & Co., was fastened to the wheel by bolts, and split 8 inches longitudinally; it did not leave the wheel.
23 October -	Upon examination of a train at Bridgwater a split tyre was discovered under a South Devon waggon. The tyre was made of iron, was fastened to the wheel by Brotherhood's patent, and split 8 inches longitudinally; it did not leave the wheel.
23 October -	Upon examination of a train at Bristol a fractured tyre was discovered under a South Devon third-class carriage. The tyre was made of steel by Messrs. H. Bessemer & Co., was fastened to the wheel by Gibson's patent, and had one transverse fracture; it did not leave the wheel.
27 October -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
30 October -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter horse-box. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
3 November -	Upon examination of a train at Reading a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 6 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Great Western—*cont.***
3 November -	Upon examination of a train at Bridgwater a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 8 inches longitudinally; it did not leave the wheel.
7 November -	Upon examination of a train at Truro a split tyre was discovered under a West Cornwall waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 31 inches longitudinally; it did not leave the wheel.
8 November -	Upon examination of a train at Bordesley Junction a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 9 inches longitudinally; it did not leave the wheel.
8 November -	Upon examination of a passenger-train at Reading a split tyre was discovered under a South Devon carriage. The tyre was made of iron by Messrs. J. Brown & Co., and was fastened to the wheel by Gibson's patent; it did not leave the wheel.
9 November -	Upon examination of a train at Exeter a fractured tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and had one transverse fracture; it did not leave the wheel.
15 November -	Upon examination of a train at Swindon a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 6 inches longitudinally; it did not leave the wheel.
16 November -	Upon examination of a train at Taunton a split tyre was discovered under a Bristol and Exeter waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 12 inches longitudinally; it did not leave the wheel.
16 November -	Upon examination of a train at Taunton a fractured tyre was discovered under a waggon. The tyre was made of "Lowmoor" iron, was fastened to the wheel by rivets, and had one transverse fracture; it did not leave the wheel.
18 November -	Upon examination of a train at Gloucester a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 24 inches longitudinally; it did not leave the wheel.
21 November -	Upon examination of a train at Exeter a fractured tyre was discovered under a waggon. The tyre was made of Bessemer steel by Messrs. S. Butcher & Co., was fastened to the wheel by Gibson's patent, and had one transverse fracture; it did not leave the wheel.
24 November -	As an engine was returning to the shed at Paddington the key lip of the trailing tyre broke, allowing the key to come out and the tyre to leave the wheel. The tyre was made of steel by Messrs. H. Bessemer & Co., was fastened to the wheel by Gibson's patent, and was put on the wheel in July 1871.
28 November -	Upon examination of a train at Chester a fractured tyre was discovered under an engine. The tyre was made of Bessemer steel by Messrs. Cammell, was fastened to the wheel by Gibson's patent, and had one transverse fracture; it did not leave the wheel.
7 December -	Upon examination of a train at Gloucester a fractured tyre was discovered under a waggon. The tyre was made of steel, was fastened to the wheel by Gibson's patent, and had one transverse fracture; it did not leave the wheel.
13 December -	Upon examination of a train at Bridgwater a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and split 10 inches longitudinally; it did not leave the wheel.
18 December -	Upon examination of a train at Bridgwater a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 8 inches longitudinally; it did not leave the wheel.
27 December -	Upon examination of a train at Newport a fractured tyre was discovered under a waggon. The tyre was made of "Lowmoor" iron, was fastened to the wheel by rivets, and had one transverse fracture; it did not leave the wheel.
29 December -	Upon examination of a train at Bridgwater a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 6 inches longitudinally; it did not leave the wheel.
29 December -	Upon examination of a train at Bridgwater a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
	Lancashire and Yorkshire.
5 March -	Upon examination of a goods-train at Nuneaton, on the London and North-western Railway, a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the bolt-hole; it did not leave the wheel.
10 March -	Upon examination of a goods-train at Colwich, on the London and North-western Railway, a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld; it did not leave the wheel.
1 August -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a cracked tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and cracked 2½ inches across; it did not leave the wheel.
19 December -	The right-hand leading wheel tyre of a passenger-engine broke at Halifax. The tyre was made of steel, and fastened to the wheel by set screws; it broke transversely in one place only, at a bolt-hole and remained on the wheel. There was no trace of flaw.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**London and North-Western.**
3 March -	Upon examination of a train at Longsight the tyre of one of the wheels of a break-van was found to be broken. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld.
6 March -	Upon examination of an empty waggon-train at Rugby a broken tyre was discovered under a waggon. The tyre was of iron, was fastened to the wheel by bolts, and fractured transversely at the bolt-holes, and did not leave the wheel.
8 March -	Upon examination of a goods-train at Bushbury a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld ; it did not leave the wheel.
8 March -	Upon examination of a train at Mold Junction a cracked tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and cracked transversely at a bolt-hole ; it did not leave the wheel.
11 March -	Upon examination of a goods-train at Crewe a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld ; it did not leave the wheel.
12 March -	Upon examination of a goods-train at Stafford a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at a bolt-hole ; it did not leave the wheel.
22 March -	Upon examination of a goods-train at Bangor a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the bolt-holes ; it did not leave the wheel.
25 March -	Upon examination of a special goods-train at Preston a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld ; it did not leave the wheel.
8 April -	Upon examination of a goods-train at Bangor a broken tyre was discovered under a waggon. The tyre was of iron, was fastened to the wheel by bolts, and fractured transversely at the weld ; it did not leave the wheel.
6 May -	Upon examination of a goods-train at Preston a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld ; it did not leave the wheel.
15 May -	Upon examination of a goods-train at Chester a broken tyre was discovered under a waggon. The tyre was made of iron, was fractured transversely at a rivet-hole, and did not leave the wheel.
21 May -	Upon examination of a goods-train at Rugby a broken tyre was discovered under a waggon. The tyre was made of iron, and fixed to the wheel by bolts ; it fractured transversely at a bolt-hole ; it did not leave the wheel.
21 June -	Upon examination of a goods-train at Crewe a waggon was found with a broken tyre. It was of iron, fastened to the wheel by bolts, and broke transversely at a bolt-hole.
22 June -	Upon examination of a waggon at Hereford one of the tyres was found to be cracked. The tyre was of iron, fastened to the wheel by bolts, and cracked transversely.
1 July -	Upon examination of a goods-train at Stafford a waggon was found with a broken tyre. It was of iron, fastened to the wheel by bolts, and broke transversely at the weld.
27 July -	Upon examination of a goods-train at Wolverton a waggon was found with a broken tyre. It was of iron, fastened by bolts, and broke transversely at the weld.
29 July -	Upon examination of a train at Llandovery, on the Great Western Railway, a broken tyre was discovered under a waggon. The tyre was made of iron by the company, was fastened to the wheel by rivets, and broke four inches longitudinally ; it did not leave the wheel.
1 August -	Upon examination of a train at Crewe a fractured tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and broke transversely at the weld.
3 August -	Upon examination of a coal-train at Ludlow a fractured tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and broke transversely at the weld.
23 August -	Upon examination of a waggon at Stafford a cracked tyre was discovered. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at a bolt-hole.
20 September -	Upon examination of a goods-train at Crewe a fractured tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and broke transversely at a bolt-hole.
26 September -	Upon examination of a waggon at Stafford a fractured tyre was discovered. The tyre was made of iron, was fastened to the wheel by bolts, and broke transversely at a bolt-hole.
26 September -	Upon examination of a ballast-waggon at Stafford a tyre was found to be cracked. The tyre was made of iron, was fastened to the wheel by bolts, and broke transversely at a bolt-hole.
27 September -	Upon examination of a goods-train at Chester a broken tyre was discovered under a break-van. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld.
2 October -	Upon examination of a goods-train at Tebay a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at a bolt-hole.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**London and North-Western—*cont.***
12 October -	Upon examination of a goods-train at Stafford a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld.
19 October -	Upon examination of a goods-train at Buxton a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at a bolt-hole.
4 November -	Upon examination of a train at Bangor a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at a bolt-hole.
25 November -	Upon examination of a train at Copley Hill a broken tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at a bolt-hole.
	London and South-Western.
16 September -	Upon examination of a train at Bridgwater, on the Great Western Railway, a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and split 11 inches longitudinally; it did not leave the wheel.
	London, Brighton, and South Coast.
11 November -	When a passenger-train from Portsmouth was running near Portcreek Junction the tyre of the right-hand driving-wheel of the engine broke. The tyre was made of "Krupp's" steel, and was fastened on to the wheel by Gibson's patent method; it broke into eight pieces, and flew off the wheel. It commenced work in 1867, was turned up in February last, when it was 1½ inch thick and in good order. It had run 241,300 miles.
	London, Chatham, and Dover.
13 December -	Upon the arrival of a passenger-train at Holborn station, the right-hand driving tyre of an engine was discovered broken straight across the tread. The tyre was made of cast steel by Messrs. Vickers, Sons, & Co., and was secured by Gibson's patent fastening. The original thickness was 3 inches, and the thickness at the date of failure 1⅝". It commenced work in July 1870, and had run 175,701 miles.
15 December -	When running from Margate to Ramsgate a third-class passenger-break was found to have a broken tyre. The tyre was made of steel by Messrs. Vickers, Sons, and Co., was secured to the wheel by Gibson's patent fastening, and commenced work in October 1867. Original thickness 2½", thickness at date of failure 1½".
	Manchester, Sheffield, and Lincolnshire.
8 March -	Whilst a coal-train was passing Ann Street Junction, Widnes, on the London and North-Western Railway, one of the tyres worked itself off a waggon. The tyre was made of iron, was fastened to the wheel by bolts, which broke, causing the tyre to shift.
14 November -	Whilst a passenger-train was travelling near Shirebrook on the Midland Railway, a leading tyre of the engine broke into four pieces at the rivet-holes and flew off the wheel, but the train was stopped without further damage being done. The tyre was made of steel by Krupp, was fastened by half-patent, had run 242,000 miles, and showed no flaw.
	North London.
21 November -	The right drawing-tyre of a tank engine came off whilst the engine was setting back with a train of coal in the Kingsland Coal Depôt. The tyre was manufactured of steel by Messrs. J. Brown & Co., and was put on new in February 1871. It was shrunk on in October 1875, and the thickness at the tread at time of fracture was 1½".
	Private Owners of Vehicles.
2 July -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Lilleshall Coal Company. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
3 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock Chase Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 20 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
3 July -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of steel by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
3 July -	Upon examination of a train at Quakers Yard, on the Great Western Railway, a broken tyre was discovered under a waggon belonging to Mr. Stephenson Clarke. The tyre was made of Bessemer steel by Messrs. S. Butcher & Co., was fastened to the wheel by Beattie's patent, and broke through flange to a rivet-hole; it did not leave the wheel.
5 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. H. Rangley and Sons. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
5 July -	Upon examination of a train at Didcot, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. D. Davies & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
6 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Birley Colliery Company. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split eight inches longitudinally; it did not leave the wheel.
6 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radbron. The tyre was made of steel, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
6 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. T. G. Plews. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
6 July -	Upon examination of a train at Leamington, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to Mr. S. J. W. Lilleshall. The tyre was made of steel, was fastened to the wheel by rivets, and had a piece broken out 3″ long × 2″ wide × 1″ thick.
6 July -	Upon examination of a train at Neath, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Messrs. Richards, Power, & Co. The tyre was made of Bessemer steel by Messrs. S. Butcher & Co., was fastened to the wheel by rivets, and had one transverse fracture at a rivet-hole; it did not leave the wheel.
6 July -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and split in flange 8 inches longitudinally; it did not leave the wheel.
6 July -	Upon examination of a train at Taunton, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Snow & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
7 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Birley Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
8 July -	Upon examination of a train at Swindon, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Mr. J. Smith. The tyre was made of iron, was fastened to the wheel by rivets, and had one transverse fracture at the weld; it did not leave the wheel.
8 July -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Nixon. The tyre was made of iron, was fastened to the wheel by rivets, and split 15 inches longitudinally; it did not leave the wheel.
8 July -	Upon examination of a train at Wheatsheaf, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
8 July -	Upon examination of a train at Wheatsheaf, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to the Bryn Malley Company. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken off the flange 13 inches longitudinally.
9 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the West Cannock Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
10 July -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and bulged eight inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
12 July -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Read and Sons. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
14 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock Chase Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
14 July -	Upon examination of a train at Didcot, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Stone Brothers. The tyre was made of iron, was fastened to the wheel by rivets, and split six inches longitudinally; it did not leave the wheel.
15 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Barker, Walker, & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
15 July -	Upon examination of a train at Worcester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Adderbury Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 30 inches longitudinally; it did not leave the wheel.
17 July -	Upon examination of a train at Stourbridge, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Earl Granville. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
19 July -	Upon examination of a train at Taunton, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Nailsea Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
20 July -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and split 30 inches longitudinally; it did not leave the wheel.
25 July -	Upon examination of a train at Reading, on the Great Western Railway, a cracked tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and cracked through the flange transversely; it did not leave the wheel.
25 July	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and bulged 12 inches longitudinally; it did not leave the wheel.
26 July -	Upon examination of a train at Swindon, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. J. Toomer. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 12 inches longitudinally; it did not leave the wheel.
26 July -	Upon examination of a train at Gloucester, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. J. Evans. The tyre was made of iron, was fastened to the wheel by rivets, and bulged two feet longitudinally; it did not leave the wheel.
26 July -	Upon examination of a train at Moreton, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Droitwich Salt Company. The tyre was made of iron, was fastened to the wheel by rivets, and split eight inches longitudinally; it did not leave the wheel.
28 July -	Upon examination of a train at Gloucester, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. J. Smith. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 12 inches longitudinally; it did not leave the wheel.
28 July -	Upon examination of a train at Gloucester, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. J. Toomer. The tyre was made of iron, was fastened to the wheels by rivets, and bulged 12 inches longitudinally; it did not leave the wheel.
28 July -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a van belonging to the Wheelock Salt Company. The tyre was made of iron, was fastened to the wheel by rivets, and split six inches longitudinally; it did not leave the wheel.
28 July	Upon examination of a train at Moreton, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. H. Clarke. The tyre was made of iron, was fastened to the wheel by rivets, and split nine inches longitudinally; it did not leave the wheel.
28 July -	Upon examination of a train at Chester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Joseph Verdin. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
31 July -	Upon examination of a train at Worcester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Lee and Jerdein. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally ; it did not leave the wheel.
31 July -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Hawkesbury Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
3 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Glamorgan Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
3 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Tyddu Coal Company. The tyre was made of iron by Messrs. G. and J. Brown, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
3 August -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the West Cannock Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split two feet longitudinally ; it did not leave the wheel.
4 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Nixon and Cory. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece shelled off the flange, 48 inches long and half-an-inch wide ; the tyre did not leave the wheel.
5 August -	Upon examination of a train at Oxley sidings, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Martin and Phillips. The tyre was made of iron by Messrs. J. Brown & Co., fastened to the wheel by rivets, and split 30 inches longitudinally : it did not leave the wheel.
5 August -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. J. North. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
6 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Coal Consumers' Association. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally ; it did not leave the wheel.
7 August -	Upon examination of a train at Ruabon, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to Messrs. Harrison & Camm. The tyre was made of iron, was fastened to the wheel by rivets, and split 21 inches longitudinally ; it did not leave the wheel.
7 August -	Upon examination of a train at Leamington, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to Mr. Henry Bradshaw. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken out of the tyre $7'' \times 1\frac{1}{2}'' \times \frac{1}{2}''$; it did not leave the wheel.
8 August -	Upon examination of a train at Wednesbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. John Scowcroft. The tyre was made of iron, was fastened to the wheel by rivets, and split 20 inches longitudinally; it did not leave the wheel.
8 August -	Upon examination of a train at Oxford, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. W. Worthington. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
9 August -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, two defective tyres were discovered under a waggon belonging to Mr. S. Clarke. The tyres were made of iron, were fastened to the wheel by rivets, and split 24 inches and 12 inches respectively; they did not leave the wheel.
10 August -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of iron, was fastened to the wheel by rivets, and split 15 inches longitudinally ; it did not leave the wheel.
10 August -	Upon examination of a train at Oxford, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. J. Wells. The tyre was made of iron by Messrs. J. Owen & Co., was fastened to the wheel by rivets, and split 24 inches longitudinally ; it did not leave the wheel.
10 August -	Upon examination of a train at Oxford, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Ridding Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split eight inches longitudinally ; it did not leave the wheel.
10 August -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and bulged 10 inches longitudinally ; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
10 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Barber, Walker, & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split six inches longitudinally; it did not leave the wheel.
11 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Radstock Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split in the flange 14 inches longitudinally; it did not leave the wheel.
11 August -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Conduit Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
12 August -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. John and George. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally, and did not leave the wheel.
13 August -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Brice Pensneth. The tyre was made of iron, was fastened to the wheel by rivets, and split nine inches longitudinally; it did not leave the wheel.
14 August -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
14 August -	Upon examination of a train at Banbury, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to the Clay Cross Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken off it of $6'' \times 1\frac{1}{2}'' \times \frac{1}{2}''$.
15 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. G. Wethered. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
16 August -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Coalbrookdale Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
17 August -	Upon examination of a train at Banbury, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to Messrs. Cole and Leigh. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken off it of $8'' \times \frac{1}{2}'' \times \frac{1}{2}''$.
17 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
17 August -	Upon examination of a train at Lydney, on the Great Western Railway, a broken tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of steel by Messrs. Cammell, was fastened to the wheel by rivets, and broke transversely; it did not leave the wheel.
23 August -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. G. Skey & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
24 August -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Glamorgan Coal Company. The tyre was made of iron, was fastened to the wheel by bolts, and split 14 inches longitudinally; it did not leave the wheel.
24 August -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Conduit Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
24 August -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Huntley and Palmer. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
25 August -	Upon examination of a train at Neath Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Evans and Bevan. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
25 August -	Upon examination of a train at Neath Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Evans and Bevan. The tyre was made of iron by Messrs. Lloyd, Foster & Co., was fastened to the wheel by rivets, and split 28 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
25 August -	Upon examination of a train at Banbury, on the Great Western Railway, two split tyres were discovered under a waggon belonging to the Cannock and Rugeley Company. The tyres were made of iron, were fastened to the wheels by rivets, and split 18 inches and 14 inches respectively; they did not leave the wheels.
26 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
26 August -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and bulged 15 inches longitudinally; it did not leave the wheel.
26 August	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. C. A. Booth & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
26 August -	Upon examination of a train at Swindon, on the Great Western Roilway, a split tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of iron, was fastened to the wheel by rivets, and split 13 inches longitudinally; it did not leave the wheel.
28 August -	Upon examination of a train at Lydney, on the Great Western Railway, a broken tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of iron, was fastened to the wheel by rivets, and broke transversely; it did not leave the wheel.
28 August -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of Bessemer steel by Messrs. S. Butcher & Co., was fastened to the wheel by Beattie's patent, and had one transverse fracture; it did not leave the wheel.
28 August -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Powell Duffryn. The tyre was made of steel by the Patent Shaft and Axletree Company, was fastened to the wheel by rivets, and split nine inches longitudinally; it did not leave the wheel.
29 August -	On the arrival of a Midland Company's goods-train at Herne Hill, on the London, Chatham, and Dover Railway, a coal waggon belonging to the Grassmoor Colliery Company, Chesterfield, was found to have a defective tyre. The tyre was made of iron, and was secured to the wheel by rivets; it split through the centre of the tread and bulged outwards. Its thickness when it failed was 1½ inches.
29 August -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. John Snow & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
29 August -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Balmain. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
30 August -	Upon examination of a train at Croes-Newydd, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Brymbo Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 20 inches longitudinally; it did not leave the wheel.
31 August -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. James Wells. The tyre was made of iron, was fastened to the wheel by rivets, and split nine inches longitudinally; it did not leave the wheel.
31 August -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Grassmoor Colliery Company. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
1 September -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Ruabon Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 36 inches longitudinally; it did not leave the wheel.
2 September -	Upon examination of a train at Newport, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Dowlais Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 14 inches longitudinally; it did not leave the wheel.
5 September -	Upon examination of a train at Moreton, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
5 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. H. Bradshaw. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876 :	**Private Owners of Vehicles—*cont.***
September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Wigan Coal and Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally ; it did not leave the wheel.
5 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Arthur Hill. The tyre was made of iron by Mr. J. Brown, was fastened to the wheel by rivets, and split 12 inches longitudinally ; it did not leave the wheel.
6 September -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Lilleshall Coal Company; the tyre was made of iron, was fastened to the wheel by rivets, and bulged two feet longitudinally; it did not leave the wheel.
6 September -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Messrs. Nixon & Co. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 12 inches longitudinally ; it did not leave the wheel.
6 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Wigan Coal and Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally ; it did not leave the wheel.
7 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Moira Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
7 September -	Upon examination of a train at Worcester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Towcester Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
7 September -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. H. W. Arnold. The tyre was made of iron, was fastened to the wheel by rivets, and split 13 inches longitudinally; it did not leave the wheel.
8 September -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally ; it did not leave the wheel.
8 September -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Aberdare Rhondda Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split eight inches longitudinally ; it did not leave the wheel.
9 September -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Davies. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
10 September -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Excell & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally ; it did not leave the wheel.
10 September -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, a broken tyre was discovered under a waggon belonging to Mr. F. Warland. The tyre was made of iron, was fastened to the wheel by rivets, and broke transversely through the weld ; it did not leave the wheel.
11 September -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and did not leave the wheel; the maker was unknown.
11 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Davey, Thompson, and Alder. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
12 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Adderbury Ironstone Company. The tyre was made of iron, was fastened to the wheel by rivets, and split nine inches longitudinally ; it did not leave the wheel.
12 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Adderbury Ironstone Company. The tyre was made of iron, was fastened to the wheel by bolts, and split 18 inches longitudinally ; it did not leave the wheel.
13 September -	Upon examination of a train at Banbury, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to the Radstock Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken out off it $10'' \times 1\frac{1}{2}'' \times \frac{3}{4}''$.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
13 September -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Prothero Trust. The tyre was made of iron, fastened to the wheel by bolts, and bulged 14 inches longitudinally; it did not leave the wheel.
14 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock and Rugeley Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
16 September -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. Snow & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
18 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Richard Coggin. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
19 September -	Upon examination of a coal-train at Stafford, on the London and North-Western Railway, a broken tyre was discovered under a waggon belonging to Mr. B. M. Tite. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld.
20 September -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Mr. S. Clarke. The tyre was made of Bessemer steel by Messrs. Cammell & Co., was fastened to the wheel by rivets, and had one transverse fracture through the weld; it did not leave the wheel.
21 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Clay Cross Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
21 September -	Upon examination of a train at Banbury, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to Messrs. Williams and Bird. The tyre was made of iron, and was fastened to the wheel by rivets; a piece shelled off face of tyre 10″ long × 3″ wide × $\frac{3}{8}$″ deep.
21 September -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. C. and J. Tyrrell. The tyre was made of iron, was fastened to the wheel by rivets, and split 36 inches longitudinally; it did not leave the wheel.
22 September -	Upon examination of a train at Taunton, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Ainsworth Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
22 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. W. Simmonds. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
22 September -	Upon examination of a train at Banbury, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to Messrs. Pooley & Co. The tyre was made of iron, and was fastened to the wheel by rivets; it had a piece broken out (outside) 2″ long × 1$\frac{1}{4}$″ wide; the tyre did not leave the wheel.
25 September -	Upon examination of a train at Banbury, on the Great Western Railway, two defective tyres were discovered under a waggon belonging to Messrs. Weeden Brothers. The tyres were made of iron by Messrs. J. Brown & Co., were fastened to the wheels by rivets, and split 22 inches and 12 inches longitudinally respectively; they did not leave the wheels.
26 September -	Upon examination of a train at Maesycwmmer, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. H. and W. Powell. The tyre was made of iron, was fastened to the wheel by rivets, and did not leave the wheel; the maker was unknown.
27 September -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Toomer Brothers. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
27 September -	Upon examination of a train at Bristol, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Westbury Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
27 September -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Glassbrook & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split eight inches longitudinally; it did not leave the wheel.
27 September -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. D. Davies & Co. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 13 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
27 September -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. G. Ayres. The tyre was made of iron, was fastened to the wheel by rivets, and did not leave the wheel. The maker was unknown.
27 September -	Upon examination of a train at Moreton-in-Marsh, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Aberdare Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and did not leave the wheel.
27 September -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Richards, Power, & Co. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 23 inches longitudinally; it did not leave the wheel.
27 September -	Upon examination of a coal-train at Nuneaton, on the London and North-Western Railway, a broken tyre was discovered under a waggon belonging to the Cannock Chase Colliery Company. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld.
29 September -	Upon examination of a train at Ruabon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. D. Thomas and Son. The tyre was made of iron, was fastened to the wheel by rivets, and split 19 inches longitudinally; it did not leave the wheel.
3 October -	Upon examination of a train at Stourbridge, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock and Rugeley Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 11 inches longitudinally; it did not leave the wheel.
3 October -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Mason & Elkington. The tyre was made of iron, was fastened to the wheel by rivets, and split 48 inches longitudinally; it did not leave the wheel.
4 October -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Waynes Merthyr Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
5 October -	Upon examination of a train at Newtown, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Davies & Co. The tyre was made of steel by Mr. W. Parker, was fastened to the wheel by rivets, and split 36 inches longitudinally; it did not leave the wheel.
5 October -	Upon examination of a train at Brentford, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Davies & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 30 inches longitudinally; it did not leave the wheel.
5 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. G. J. Eveson. The tyre was made of iron, was fastened to the wheel, by rivets, and split 12 inches longitudinally; it did not leave the wheel.
5 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. W. and J. Turner. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
5 October -	On the arrival of a Midland Company's goods-train at Herne Hill, on the London, Chatham, and Dover Railway, a coal-waggon belonging to Mr. H. Tyrer, of St. Mary Cray, was found to have a defective tyre. The tyre was secured to the wheel by rivets; it broke at a rivet-hole, and split about 11 inches in the centre. The thickness when it failed was about $1\frac{1}{2}$ inches.
6 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Brymbo Colliery Company. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
9 October -	Upon examination of a train at Hirwain, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Messrs. Stephenson, Clarke, & Co. The tyre was made of Bessemer steel by Messrs. S. Butcher & Co., was fastened to the wheel by Beattie's patent, and had one transverse fracture; it did not leave the wheel.
10 October -	Upon examination of a train at Bordesley Junction on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. W. Palmer. The tyre was made of steel, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
11 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. H. Hood. The tyre was made of steel, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
11 October -	Upon examination of a train at Swindon, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Messrs. D. Davies & Sons. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 15 inches longitudinally.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
12 October -	Upon examination of a train at Neath Junction, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. O. H. Thomas. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 16 inches longitudinally.
12 October -	Upon examination of a train at Dolgelly, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to the Lester Lime Company. The tyre was made of iron by Messrs. J. and G. Brown, was fastened to the wheel by rivets, and had one transverse fracture; it did not leave the wheel.
13 October -	Upon examination of a train at Stourbridge, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Hatham, Rogers, & Co. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 36 inches longitudinally; it did not leave the wheel.
13 October -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Davies. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
14 October -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Davies. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
16 October -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Middle Ammer Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
17 October -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. T. H. Evans. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
17 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Ruabon Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
17 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. H. Case & Co. The tyre was made of iron by the Ongree Foundry Company, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
17 October -	Upon examination of a train at Neath Junction, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Mr. Stephenson Clarke. The tyre was made of Bessemer steel by Messrs. Brown, Bayley, and Dixon, was fastened to the wheel by rivets, and had one transverse fracture; it did not leave the wheel.
18 October -	Upon examination of a train at Didcot, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Hall and Boardman. The tyre was made of iron, was fastened to the wheel by rivets, and split 13 inches longitudinally; it did not leave the wheel.
18 October -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Toomer Brothers. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
19 October -	Upon examination of a train at Penalta siding, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of Bessemer steel by Messrs. S. Butcher & Co., was fastened to the wheel by rivets, and split 30 inches longitudinally; it did not leave the wheel.
19 October -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. J. Wells. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
19 October -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Droitwich Salt Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 7 inches longitudinally; it did not leave the wheel.
20 October -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was diecovered under a waggon belonging to Messrs. Richards, Power, & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 11 inches longitudinally; it did not leave the wheel.
20 October -	Upon examination of a train at Neath Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Glassbrook, Thomas, and Sons. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
20 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Hackett & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles**—*cont.*
20 October -	Upon examination of a train at Greatbridge on the London and North Western Railway, a broken tyre was discovered under a waggon belonging to the Greatbridge Iron and Steel Company. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld.
21 October -	A tyre of a coal-truck belonging to Messrs. Stephenson Clarke & Co. broke at Bury St. Edmunds; the tyre was made of steel, and was fastened on to the wheel with Beattie's clips, and rivets through the centre; it broke through the solid, and did not leave the wheel.
21 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. Scowcroft & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
21 October -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Lilleshall Colliery Company. The tyre was made of iron by Messrs. Owen & Co., was fastened to the wheel by rivets, and split 9 inches longitudinally; it did not leave the wheel.
21 October -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. H. Bradshaw. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
23 October -	Upon examination of a train at Ruabon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Gardden Lodge Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split two inches longitudinally; it did not leave the wheel.
23 October -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Hollybush Colliery Company. The tyre was made of iron by Messrs. J. Owen & Co., was fastened to the wheel by rivets, and split 15 inches longitudinally; it did not leave the wheel.
23 October -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. S. Clarke & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
24 October -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Nixon, Taylor, & Co. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
24 October -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Mendip Stone Works Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 13 inches longitudinally; it did not leave the wheel.
24 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the West Cannock Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
25 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to the Ruabon Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken off the flange 4 inches long by $2\frac{1}{2}$ inches wide; it did not leave the wheel.
25 October -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Wyken Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
25 October -	Upon examination of a train at Dudley, on the Great Western Railway, a broken tyre was discovered under a waggon belonging to Mr. J. Scowcroft. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and broke transversely through a rivet-hole; it did not leave the wheel.
26 October -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. S. Saxon. The tyre was made of iron, was fastened to the wheel by rivets, and split 20 inches longitudinally; it did not leave the wheel.
26 October -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Lilleshall Company. The tyre was made of iron by Messrs. J. Owen & Co., was fastened to the wheel by rivets, and bulged 18 inches longitudinally.
26 October -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. J. Wells. The tyre was made of iron by Messrs. J. Owen & Co., was fastened to the wheel by rivets, and bulged 18 inches longitudinally.
27 October -	Upon examination of a train at Banbury, on the Great Western Railway, a defective tyre was discovered upon a waggon belonging to Messrs. Perrin and Harrison. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken off $9''$ long $\times$ $1\frac{1}{2}''$ wide $\times$ $\frac{3}{8}''$ deep.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876 :	**Private Owners of Vehicles—*cont.***
27 October -	Upon examination of a train at Croes Newydd, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Brymbo Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 8 inches longitudinally ; it did not leave the wheel.
27 October -	Upon examination of a train at Croes Newydd, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Brymbo Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 6 inches longitudinally ; it did not leave the wheel.
27 October -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Nantyglo and Blaina Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally ; it did not leave the wheel.
27 October -	Upon examination of a train at Bridgwater, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. Snow & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 6 inches longitudinally ; it did not leave the wheel.
27 October -	Upon examination of a train at Newtown, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Davies Ocean Steam Coal Colliery Company's waggon. The tyre was made of iron by Messrs. A. Robinson & Co., was fastened to the wheel by rivets, and split 12 inches longitudinally ; it did not leave the wheel.
28 October -	Upon examination of a train at Ruabon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Penycoedd Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally ; it did not leave the wheel.
28 October -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cwmaman Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally ; it did not leave the wheel.
28 October -	Upon examination of a train at Newtown, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. D. Davies & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 13 inches longitudinally ; it did not leave the wheel.
29 October -	Upon examination of a train at Oxford, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Mendip Stone Works Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 20 inches longitudinally ; it did not leave the wheel.
29 October -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock and Rugeley Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally ; it did not leave the wheel.
30 October -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Clapp & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 43 inches longitudinally ; it did not leave the wheel.
31 October -	Upon examination of a train at Newtown, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. D. Davies & Co. The tyre was made of iron by Messrs. A. Robinson & Co., was fastened to the wheel by rivets, and split 21 inches longitudinally ; it did not leave the wheel.
1 November -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 15 inches longitudinally ; it did not leave the wheel.
1 November -	Upon examination of a train at Croes Newydd, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Minerva Lime Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 8 inches longitudinally ; it did not leave the wheel.
1 November -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock and Rugeley Company. The tyre was made of iron by the Ongree Foundry Company, was fastened to the wheel by rivets and split 24 inches longitudinally ; it did not leave the wheel.
2 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Conduit Colliery Company. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 8 inches longitudinally ; it did not leave the wheel.
2 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. and C. Wells. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally ; it did not leave the wheel.
2 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Grassmoor Colliery Company. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 20 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
4 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Ruabon Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
4 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a defective tyre was discovered under a waggon belonging to Mr. C. Maggs. The tyre was made of iron, was fastened to the wheel by rivets, and had a piece broken out of the flange 12 inches long.
4 November -	Upon examination of a train at Bridgwater, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Snow & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
4 November -	Upon examination of a train at Coton Hill, upon the Great Western Railway, a fractured tyre was discovered under a waggon belonging to the Westminster Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and had one transverse fracture through a rivet-hole.
6 November -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Nixon Duffryn. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split six inches longitudinally; it did not leave the wheel.
6 November -	Upon examination of a train at Bordesley Junction, a split tyre was discovered under a waggon belonging to the Radstock Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
6 November -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Burgess Shadick & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 32 inches longitudinally; it did not leave the wheel.
7 November -	The tyre of one of the wheels of a coal-waggon belonging to Messrs. J. and J. Gripper broke at Cambridge, on the Great Eastern Railway. The tyre was made of iron; it was fastened on to the wheel with rivets; it fractured at a rivet-hole, and did not leave the wheel.
9 November -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Messrs. Stephenson, Clarke, & Co. The tyre was made of steel by Messrs. Cammell, was fastened to the wheel by Beattie's patent, and had one transverse fracture.
9 November -	Upon examination of a train at Ruabon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Haram. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 20 inches longitudinally; it did not leave the wheel.
11 November -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. D. Davies & Co. The tyre was made of iron by Messrs. J. Brown & Co., fastened to the wheel by rivets, and split eight inches longitudinally; it did not leave the wheel.
13 November -	Upon examination of a train at Bordesley, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Phillips and Lamont. The tyre was made of iron by Messrs. J. Owen & Co., was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
14 November -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Lee and Jerdein. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
14 November -	Upon examination of a train at Reading, on the Great Western Railway, a broken tyre was discovered under a waggon belonging to the Clay Cross Company. The tyre was made of iron by Messrs. J. Brown & Co., and had one transverse fracture through rivet-hole; it did not leave the wheel.
15 November -	Upon examination of a train at Didcot, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Aberdare Merthyr Steam Coal Company. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
15 November -	Upon examination of a train at Reading, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Aberdare Rhondda Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
16 November -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Norton & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
17 November -	Upon examination of a train at Stourbridge, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Forest of Dean Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 15 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
17 November -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Aberdare and Merthyr Steam Coal Company. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and bulged 18 inches longitudinally.
20 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Penygraig Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
21 November -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cwmaman Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split six inches longitudinally; it did not leave the wheel.
22 November -	Upon examination of a train at Chester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of iron, was fastened to the wheel by rivets, and split 48 inches longitudinally; it did not leave the wheel.
23 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. James Balmain. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
24 November -	Upon examination of a train at Gloucester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Westbury Iron Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
27 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Pope and Pearson. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
27 November -	Upon examination of a train at Hollinswood, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. T. B. Bevan & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 13 inches longitudinally; it did not leave the wheel.
28 November -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. D. Radford. The tyre was made of iron, was fastened to the wheel by rivets, and split four feet longitudinally; it did not leave the wheel.
28 November -	Upon examination at Herne Hill sidings, on the London, Chatham, and Dover Railway, a coal-waggon belonging to Messrs. S. Clarke & Co. was found to have a split tyre. The tyre was made by Messrs. Brown & Co., and was secured to the wheel by rivets; the fracture occurred at a rivet-hole. The thickness at the date of failure was $1\frac{1}{2}''$.
29 November -	Upon examination of a train at Worcester, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Stephenson, Clarke, & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
29 November -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Hackett & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
29 November -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. M. Stubbs. The tyre was made of iron, was fastened to the wheel by rivets, and split 14 inches longitudinally; it did not leave the wheel.
30 November -	Upon examination of a train at Oxford, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Ruabon Coal Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
30 November -	Upon examination of a train at Swindon, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Messrs. D. Davis & Co. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 15 inches longitudinally.
1 December -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Ruabon Coal Company. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and bulged 12 inches longitudinally.
1 December -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Locket and Judkins. The tyre was made of iron, was fastened to the wheel by rivets, and split 9 inches longitudinally; it did not leave the wheel.
2 December -	Upon examination of a train at Stourbridge, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock Chase Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 36 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
3 December -	Upon examination of a train at Newtown, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Sumsion. The tyre was made of iron, was fastened to the wheel by rivets, and split 3 feet 6 inches longitudinally; it did not leave the wheel.
4 December -	Upon examination of a train at Bristol, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to the Earl of Shrewsbury. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 8 inches longitudinally.
5 December -	Upon examination of a train at Reading, on the Great Western Railway, a bulged tyre was discovered under a waggon belonging to Mr. Radbron. The tyre was made of iron, was fastened to the wheel by rivets, and bulged 18 inches longitudinally.
5 December -	Upon examination of a train at Swindon, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Read & Sons. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
8 December -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Ruabon Coal Company. The tyre was made of iron, was fastened to the wheel by Gibson's patent, and split 10 inches longitudinally; it did not leave the wheel.
9 December -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the West Cannock Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
12 December -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. E. A. Walter & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
12 December -	Upon examination of a train at Bristol, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cattybrook Brick Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 12 inches longitudinally; it did not leave the wheel.
12 December -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
12 December -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of iron by Messrs. J. Brown & Co., was fastened to the wheel by rivets, and split 28 inches longitudinally; it did not leave the wheel.
12 December -	Upon examination of a train at Herne Hill sidings, on the London, Chatham, and Dover Railway, a coal-waggon belonging to Mr. H. Tyrer was found to have a split tyre. The tyre was secured to the wheel by rivets, and split longitudinally and bulged. Thickness at date of failure $1\frac{3}{4}$ inches.
13 December -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Stephenson Clarke, & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
13 December -	Upon examination of a train at Ruabon, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to the Bryn Mawr Coal Company. The tyre was made of Bessemer steel by Messrs. Brown, Bayley, and Dixon, and had one transverse fracture through a rivet-hole; it did not leave the wheel.
14 December -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Radbron & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 24 inches longitudinally; it did not leave the wheel.
20 December -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Rugeley Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 10 inches longitudinally; it did not leave the wheel.
21 December -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Great Fenton Colliery Company. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
21 December -	Upon examination of a train at Leamington, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. Booth Brothers. The tyre was made of iron, was fastened to the wheel by rivets, and split 16 inches longitudinally; it did not leave the wheel.
21 December -	Upon examination of a train at Bordesley Junction, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. W. Harding & Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
21 December -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Messrs. S. Clarke & Co. The tyre was made of steel by Messrs. J. Brown & Co., was fastened to the wheel by Beattie's patent, and had one transverse fracture; it did not leave the wheel.
21 December -	Upon examination of a train at Pontypool Road, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Messrs. J. G. and W. Barnes. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
22 December -	Upon examination of a train at Crumlin Junction, on the Great Western Railway, a fractured tyre was discovered under a waggon belonging to Messrs. S. Clark & Co. The tyre was made of iron, was fastened to the wheel by Beattie's patent, and had one transverse fracture; it did not leave the wheel.
23 December -	Upon examination of a train at Banbury, on the Great Western Railway, a split tyre was discovered under a waggon belonging to the Cannock and Rugeley Co. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
23 December -	Upon examination of a train at Oxley siding, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. W. V. Baines. The tyre was made of iron, was fastened to the wheel by rivets, and split 4 inches longitudinally; it did not leave the wheel.
28 December -	A waggon belonging to the Annesley Colliery Company was stopped with a broken tyre at Melford on the Great Eastern Railway. The tyre was made of iron, was fastened to the wheel by rivets, and broke in one place only; it remained on the wheel.
30 December -	Upon examination of a train at Brymbo, on the Great Western Railway, a split tyre was discovered under a waggon belonging to Mr. Sanderson. The tyre was made of iron, was fastened to the wheel by rivets, and split 20 inches longitudinally; it did not leave the wheel.

SCOTLAND.

1876:	**Caledonian.**
12 August -	Upon examination of a train at Moreton-in-the-Marsh, on the Great Western Railway, a split tyre was discovered under a waggon. The tyre was made of iron, was fastened to the wheel by rivets, and split 18 inches longitudinally; it did not leave the wheel.
22 August -	Upon examination of a train at Oxley siding, on the Great Western Railway, a split tyre was discovered under a waggon. The tyre was made of iron by Messrs. G. & J. Brown, was fastened to the wheel by rivets, and split 32 inches longitudinally; it did not leave the wheel.
2 October -	When an engine was standing in the shed at Carlisle its right-hand trailing-wheel tyre was found to be broken. The tyre was made of Bessemer steel, and was stamped "Rowan & Co.'s, Glasgow, Bessemer-steel, 27–12–72"; it was secured to the wheel with a clip and bolts; it fractured transversely at a bolt-hole, but there was no appearance of any flaw; the tyre had run 157,817 miles.
3 October -	On the arrival of a goods-train at St. Rollox the tyre of one of the wheels of the tender was found to be broken. The tyre was made of Bessemer steel of good quality, and was stamped "Henry Bessemer, 22–3–72"; it was fastened on to the wheel with a clip and bolts; it fractured transversely at a bolt-hole, but there was no appearance of any flaw at the place of fracture; the tyre had run 111,460 miles.
13 October -	Whilst a loaded coal-waggon was standing in a siding at Upper Greenock one of its tyres was found to be broken. The tyre was made of iron of fair quality, by the Govan Iron-works Company, and was stamped "Glasgow B."; it was fastened on to the wheel with snap-headed rivets, $\frac{3}{4}$ inch in diameter; it fractured transversely in the solid, but there was no appearance of any flaw.
11 November -	A mineral waggon at Aberdeen was found to have a broken tyre. The tyre was made of iron of good quality; it was fastened on to the wheel with snap-headed rivets; it fractured transversely at the weld, and the fracture had the appearance of having been broken for some time previously.
13 November -	On the arrival of a goods-train at Forfar a mineral waggon was found to have a broken tyre. The tyre was made of iron, and was fastened to the wheel with snap-headed rivets; it fractured transversely at a rivet-hole, and the section had the appearance of having been broken for some time.
14 November -	When an engine was standing in the running-shed at Perth South one of the tyres of the tender was found to be broken. The tyre was made of steel of good quality; it was fastened on to the wheel with annular rings and bolts; it fractured transversely in the solid, and the fracture had the appearance of having been broken for some time previously. The tyre had run 55,948 miles.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

SCOTLAND.

IRELAND.

FAILURES OF TYRES.

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Caledonian—*cont.***
21 November -	One of the tyres of a waggon was found broken at Stirling. The tyre was made of iron of good quality, and was fastened to the wheel by bolts and nuts. It had the appearance of having been broken for some time before it finally gave way.
30 November -	On the arrival of a goods-train at Forfar one of the wheel tyres of a waggon was found to be broken. The tyre was made of iron of good quality, and was fastened to the wheel with snap-headed rivets. There was but one fracture, transversely at the weld, and it had the appearance of having been broken for some time.
5 December -	On the arrival of a goods-train at Guthrie one of the wheel tyres of a cattle waggon was found to be broken. The tyre was made of iron of fair quality, and was fastened to the wheel with snap-headed rivets. There was but one fracture and that transversely, but not at a rivet-hole nor at the weld, and it had the appearance of having been broken for some time.
19 December -	On examination at Glasgow a waggon was found with a broken tyre. The tyre was made of iron, was fastened to the wheel with snap-headed rivets, and fractured transversely at the weld.
	North British.
30 September -	While a goods-train was running near Bathgate the tyre of one of the trailing-wheels of the engine broke. The tyre was made of steel, and was fastened on to the wheel with five rivets; it fractured at a rivet-hole, and opened about an inch, but did not leave the wheel.
3 October -	Upon examination of a train at Carlisle on the London and North-Western Railway, a tyre of a waggon was found to be broken. The tyre was made of iron, was fastened to the wheel by bolts, and fractured transversely at the weld.

IRELAND.

1876:	**Great Southern and Western.**
25 November -	When a train was running between Cork and Blarney the tyre of the right driving-wheel of an engine broke. The tyre was made of steel, was fastened to the wheel by bolts, and broke transversely through a bolt-hole into four pieces, three of which flew off. It had run 201,742 miles.
12 December -	Upon examination of a train at Kildare station a broken tyre was discovered on the leading-wheel of an engine. The tyre was made of steel, was fastened to the wheel by bolts, and split transversely through a bolt-hole; it did not leave the wheel.

ENGLAND AND WALES.

FAILURES OF AXLES.

RETURN of the FAILURES of AXLES reported to the BOARD OF TRADE by the several RAILWAY COMPANIES during the Months of October, November, and December 1876.

ENGLAND AND WALES.

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Great Eastern.**
6 October -	When a goods-train for Bury was about to start from Cambridge the crank-axle of the engine was found to be broken. The axle was made of iron by the Monkbridge Iron Company, and had, up to the time it failed, run 249,611¼ miles.
6 October -	On the arrival of a goods-train at Bishops Stortford one of the journals of an axle of a waggon was found to have twisted off. The axle was made of iron.
24 October -	Whilst a passenger-train was running between Enfield and White Hart Lane stations the crank-axle of the engine broke. The axle was made of iron by Messrs. Taylor Brothers, and had, up to the time it failed, run 127,114¼ miles.
27 October -	While a passenger-train was travelling between Magdalen Road and Middle Drove stations the crank-axle of the engine broke. The axle was made of iron by Messrs. Taylor Brothers, and had, up to the time it failed, run 97,405¼ miles.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Great Northern.**
2 September -	Whilst a passenger-train was travelling near Luton station the leading-axle of the engine broke. The axle was made of steel by Messrs. Cammell & Co., and had, up to the time it failed, run 220,784 miles. It broke in the centre, and there was a slight flaw at the fracture.
6 September -	Whilst a ballast-train was running near Bingham an axle of one of the waggons broke. The axle was made of wrought-iron by the Patent Shaft and Axletree Company; it fractured at the wheel-seat, and the section showed a considerable flaw.
17 November -	As a passenger-train was passing Wakefield station the crank-axle of the engine broke. The axle was made of steel by Messrs. Vickers, had run 224,603 miles, and showed a flaw.
27 November -	As a passenger-train was running between Skegness and Firsby the crank-axle of the engine broke. The axle was made of wrought-iron by Messrs. Cooper of Leeds, had run 173,309 miles, and showed a flaw.
	Great Western.
3 July - -	Upon examination of a train at Bristol a bent axle was discovered under a van.
24 July - -	On the arrival of a goods-train at Edge Hill, on the London and North-western Railway, a waggon was found with one of its journals twisted off. The axle was of iron, and broke by having run hot.
24 August -	Upon examination of a train at Reading a bent axle was discovered under a waggon.
9 September -	Upon examination of a train at Taunton a bent axle was discovered under a third-class carriage.
10 September -	Upon examination of a train at Truro the journal of an axle under a West Cornwall waggon was found to be burnt off. The axle was made of iron at Swindon.
15 September. -	Upon examination of a train at Didcot a bent axle was discovered under a waggon.
16 September -	Upon examination of a train at Reading the journal of an axle under a waggon was found to be broken off. The axle was made of iron at Swindon.
8 October -	The crank-axle of an engine was found broken near Acton. The axle was made of iron at the Swindon Works, and commenced work in February 1874, and had run 58,948 miles.
14 October -	The engine of a goods-train failed in consequence of a crank-axle breaking near Standish Junction. The axle was made of iron at Swindon Works, and, since it commenced work in March 1874, had run 61,264 miles.
17 October -	The crank-axle of the engine of a goods-train broke at Caerleon. It was made of iron at the Swindon Works; it commenced work in October 1867, and had, up to the time it failed, run 160,922 miles.
19 October -	As a passenger-train was travelling near Radley the crank-axle of the engine broke. The axle was made of crucible-steel by Messrs. Vickers & Co.; it commenced work in March 1865, and had run 56,241 miles.
23 October -	An engine failed at Pill Bank in consequence of the crank-axle breaking. The axle was made of iron by Messrs. Taylor Brothers, Leeds, in August 1859. The mileage was unknown.
26 October -	The crank-axle of the engine of a goods-train broke at Acton. It was made of iron at the Stafford Road Works; it commenced work in February 1874, and had run 58,057 miles.
26 October -	The crank-axle of the engine of a goods-train broke at Worcester. It was made of iron at the Swindon Works; it commenced work on October 1st, 1872, and had, up to the time it failed, run 109,553 miles.
6 November -	One of the axles of a waggon broke near Witham, and caused four other vehicles to leave the rails. The axle was made of iron and had a flaw in it. *See also page* 11.
8 November -	Whilst a goods-train was travelling between Henwick and Bransford Road, the crank-axle of the engine broke. The axle was made of iron at the Swindon Works; it commenced work in January 1868, and had run 143,736 miles. The fracture occurred in the left-hand throw.
10 November -	On the arrival of a train at Didcot the journal of an axle under a waggon was found burnt off. The axle was made of iron at Swindon Works, and commenced work in November 1876; mileage unknown.
11 November -	The engine of a goods-train failed at Landore in consequence of the crank-axle breaking. The axle was made of iron at Swindon Works, and had run 160,306 miles; it fractured in the left-hand web.
15 November -	The engine of a goods-train failed at Challow in consequence of a crank-axle breaking. The axle was made of iron at Swindon Works, and, since it commenced running in October 1872, had run 105,359 miles.
16 November -	The engine of a passenger-train failed near Totnes in consequence of the crank-axle breaking. The axle was made of iron, but the maker's name and date of construction are not known.
18 November -	The engine of a goods-train failed near Chepstow in consequence of the crank-axle breaking. The axle was made of iron at the Swindon Works, and commenced work in March 1872, since when it had run 105,203 miles.

ENGLAND AND WALES.

FAILURES OF AXLES.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Great Western—*cont.***
21 November -	A goods-train was slightly delayed between St. Germains and Menheniot in consequence of the crank-axle of the engine breaking. The axle was made of iron at Swindon Works, commenced work in August 1866, and had run 215,726 miles.
22 November -	The engine of a goods-train failed near Marsh Brook, on the London and North-western and Great Western Joint Railway, in consequence of the crank-axle breaking. The axle was made of iron at Swindon Works, and commenced work in March 1874, since when it had run 75,097 miles.
22 November -	The crank-axle of the engine of a passenger-train broke at Bathampton. It was made at Swindon Works, of iron, and commenced work in November 1875, since when it had run 57,217 miles.
25 November -	Upon examination of a train at Dawlish a bent axle was discovered under a Bristol and Exeter waggon.
15 December -	The crank-axle of the engine of a passenger-train broke at Camborne. It was made of iron, but the maker and date of construction were unknown.
19 December -	The crank-axle of an engine broke in the left-hand web at Stonehouse. The axle was made of iron at Swindon Works, and, since it commenced work in October 1868, had run 170,229 miles.
20 December -	The crank-axle of the engine of a goods-train broke at Rossett. It was made of iron at the Stafford Road Works ; it commenced work in January 1869, and had run 162,166 miles.
21 December -	The engine of a goods-train failed at Ross in consequence of the crank-axle breaking. The axle was made of iron at Swindon Works, commenced work in April 1871, and had run 138,044 miles.
21 December -	Upon examination of a train at Didcot a bent axle was discovered under a waggon.
23 December -	The crank-axle of an engine broke at Blaendare. It was made of iron at the Swindon Works ; it commenced work in February 1873, and had run 68,189 miles.
	Lancashire and Yorkshire.
18 October -	The leading axle of the tender to an engine broke at Burnley. It was made of iron at the Company's works ; it fractured in the wheel-seat, and the fracture showed a slight flaw.
21 November -	One of the axles of a waggon broke at Rainford. It was made of the best Yorkshire iron, and fractured at the shoulder behind the boss of the wheel.
28 November -	The leading-axle of the tender of a goods-engine broke at Horbury. It was made of iron by the Company, and showed flaws.
12 December -	The leading axle of an engine attached to a coal-train broke at Heckmondwike. The axle was made of iron by the Company, was put under the engine in June 1856, and had run 557,427 miles. It broke close to the boss.
18 December -	The leading-axle of a tender broke at North Dean. It was made of iron by the Company many years ago.
	London and North-Western.
18 March -	Upon examination of a goods-train at Nuneaton it was found that one of the journals of a waggon was twisted off. The axle was of iron, and the breakage was caused by its having run hot.
8 April -	Whilst a goods-train was travelling between Shelwick Junction and Moreton an axle under a waggon broke. The axle was made of iron, and the fracture, which occurred transversely, was caused by a flaw in the material.
8 May -	Upon examination of a goods-train at King's Langley it was found that a waggon had twisted and broken a journal. The axle was made of iron.
17 May -	Upon examination of a goods-train at Stafford it was discovered that a waggon had one of its journals twisted off. The waggon arrived with a hot axle, which was the cause of fracture ; the material was of iron.
21 May -	Upon examination of a goods-train at Rugby it was found that a waggon had twisted its journal off. The axle was made of iron.
8 June -	As a goods-train was travelling near Embleton an axle of a waggon broke in two places. The axle was of iron, and fractured owing to a flaw.
27 June -	An axle of a van loaded with tin broke about five miles from Brecon on the Neath and Brecon Railway. *See also page* 16.
7 July -	While a coal-train was travelling near Pontardulais, on the Great Western Railway, both axles of a waggon broke. The axles were made of iron, and broke close to the bosses of the wheels.
10 August -	Upon examination of a train at Watford the journal of an iron axle was found to be twisted off owing to the axle running hot.
22 September -	As a goods-train was travelling past Heath Lane the journal twisted off an iron axle under a waggon owing to the axle running hot.
5 October -	Upon examination of a train at Bath, on the Great Western Railway, a bent axle was discovered under a waggon.

Part I.—Return of Accidents to Trains, Rolling Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**London and North-Western—*cont.***
18 October -	As a ballast-train was travelling near Higham Ferrers the axle of a waggon broke. The axle was made of iron; it fractured transversely, and showed a flaw.
21 October -	As a special goods-train was travelling near Ystrad station a waggon-axle broke. The axle was made of iron, and did not show any previous flaw.
27 November -	A waggon loaded with pig-iron left the rails when travelling between Cockermouth and Embleton stations, on the Cockermouth, Keswick, and Penrith Railway, in consequence of a bent axle. *See also page* 9.
	London and South-Western.
13 December -	The trailing-axle of an engine broke while it was travelling with a passenger-train near Weybridge station. The axle was made of best fagotted iron by Messrs. Taylor, and commenced work in December 1865.
22 December -	Whilst an engine was piloting a passenger-train at Lidford its trailing-axle broke. The axle was made of fagotted iron by Messrs. Lloyds, Fosters, & Co.
26 December -	The engine of a passenger-train failed near Twickenham in consequence of its leading-axle breaking. The axle was made of iron by Messrs. Beyer, Peacock, & Co.
	London, Brighton, and South Coast.
3 October -	The crank-axle of the engine of a goods-train failed at Earlswood. The axle was made of steel by Messrs. Vickers, of Sheffield, and had, up to the time it broke, run 48,099 miles.
3 October -	Whilst a passenger-train was running near Balham the crank-axle of the engine broke. The axle was made of iron by Messrs. Cooper & Co., of Leeds, and had, up to the time it failed, run 142,604 miles.
26 October -	Whilst a goods-train was shunting at Ford Junction, the crank-axle of the engine broke. The axle was made of iron by Messrs. Cooper, of Leeds, and was put under the engine in 1872, since which time it had run 104,957 miles.
22 November -	The crank-axle of an engine broke when ascending the Balham bank with a goods-train. The axle was made of steel by Messrs. Vickers, of Sheffield, and was put under the engine in October 1874, since when it had run 50,827 miles. It broke in the left-hand web inside, close to the big end journal.
4 December -	The crank-axle of an engine broke as it was leaving Willow Walk with a goods-train. The axle was made of steel by Messrs. Vickers, of Sheffield, and broke in the left-hand web inside, close round the corners of the big end journal. It was put under the engine in July 1873, and had run 87,117 miles.
	London, Chatham, and Dover.
1 October -	The crank-axle of the engine "Europa" broke when working a passenger-train. It was made of cast-steel by Messrs. Vickers, Sons, & Co.; it commenced work in September 1873, and had run 109,540 miles. The fracture occurred at the right-hand crank-pin, and showed a very considerable flaw.
	Manchester, Sheffield, and Lincolnshire.
4 July -	On the arrival of a goods-train at Crewe, on the London and North-western Railway, a journal was found to be twisted off a waggon. The axle was of iron, and got hot because of a defect in the grease-box.
13 August -	On the arrival of a goods-train at Crewe, on the London and North-western Railway, a journal of a waggon was found to have been twisted off. The axle was made of iron, and got hot through a defect in the grease-box.
13 October -	The crank-axle of the engine of an iron-ore train broke at Thorne. It was made of iron by Messrs. Cooper & Co., of Leeds; it was put in the engine new on the 24th June 1870, and had run 127,141 miles. There was no appearance of any flaw at the place of fracture.
17 October -	On the arrival of a goods-train at Beattock, on the Caledonian Railway, one of the axles of a waggon was found to be broken. The axle was made of fagoted iron of good quality, and there was no appearance of any flaw at the place of fracture, which occurred at one of the journals.
18 October -	The crank-axle of the engine of a goods-train broke at Wortley. It was made of iron by Messrs. Cooper & Co., of Leeds; it was put in the engine on April the 28th, 1874, and had run 64,715 miles. It broke at the right-hand outside-crank, and there was no appearance of any flaw at the place of fracture.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Manchester, Sheffield, and Lincolnshire—*cont.***
13 November -	The crank-axle of the engine of a passenger-train broke at Moortown. It was made of iron by the Company, and had run 240,762 miles. There was no appearance of any flaw at the place of fracture.
29 November -	The crank-axle of an engine working a passenger-train broke near Worksop, but no further damage was done. The axle was made of steel by Messrs. Cammell & Co., and had run 124,892 miles. There had been a gradual breakage.
	Midland.
25 September -	As a passenger-train from London to Leicester was approaching Hendon Station the crank-axle of the engine broke. The axle was made of iron by Messrs. Taylor Brothers, of Leeds; it was put under the engine in November 1872, and had, up to the time it failed, run 170,617 miles.
22 November -	As a passenger-train was approaching Whissendine Station the crank-axle of the engine broke. It was made of iron by Messrs. Reay and Usher, was put under the engine in August 1868, and had run 224,445 miles.
1 December -	As a passenger-train was passing Lifford the crank-axle of the engine broke, causing slight delay to the train. The axle was made of iron by Messrs. Taylor Brothers, and was put under the engine in May 1874, since which time it had run 95,823 miles.
	North-Eastern.
17 March -	Upon examination of a goods-train at Crewe, on the London and North-western Railway, a waggon was found to have a journal twisted off. The axle was made of iron. The breakage appeared to have been caused by the axle-box grease-holes having got filled with dirt, which caused the journal to heat and twist off.
11 October -	As a train of empty coal-waggons was travelling near Percy Main the crank-axle of the engine broke. The axle was made of the best Yorkshire iron by Messrs. Taylor Brothers & Co., of the Clarence Iron Works, Leeds, and had, up to the time it failed, run 333,922 miles. The fracture occurred in one of the journals.
17 October -	As a goods-train was travelling near Bolton Percy the crank-axle of the engine broke. The axle was made of the best Yorkshire iron by the Monk Bridge Iron Company, Leeds, and had, up to the time it failed, run 139,501 miles.
27 October -	As a passenger-train was travelling near Gristhorpe the crank-axle of the engine broke. The axle was made by Messrs. Cooper & Co., of Leeds, of the best Yorkshire iron, and had, up to the time it failed, run 342,015 miles.
30 October -	As a passenger-train was travelling near Ferry Hill the crank-axle of the engine broke. The axle was made of the best iron by Messrs. Reay and Usher, of the South Hylton Forge, Sunderland, and had, up to the time of its breaking, run 146,546 miles.
7 November -	As a passenger-train from Withernsea to Hull was travelling near Patrington the crank-axle of the engine broke. The axle was made of the best Yorkshire iron by Messrs. Taylor Brothers & Co., of Leeds, and had, up to the time it failed, run 228,393 miles.
5 December -	As a coal-train was proceeding near Bedale the leading-axle of the engine broke. The axle was composed of the best iron that could be obtained for the purpose, and had run 550,853 miles.
	North London.
30 November -	The trailing-axle of an inside cylinder engine broke when running light between Chalk Farm and Camden stations, and one rail and three chairs were broken in consequence. The axle was made of Bessemer steel, supplied by Messrs. J. Brown & Co., and commenced working in March 1865, having run a total distance of 336,218 miles. It broke close to the boss of the wheel, and showed a very extensive old fracture.
	North Staffordshire.
12 August -	As a goods-train was travelling near Trent Junction, on the London and North-western Railway, the journal of one of the axles twisted off in consequence of having run hot. It was of iron.
5 October -	On the arrival of a goods-train at Tutbury Station the crank-axle of the engine was found to be broken. The axle was made of wrought-iron by Messrs. Cooper & Co., and had, up to the time it failed, run 144,690 miles.
8 November -	As a passenger-train was approaching Wall Grange Station the crank-axle of the engine broke. The axle was made of wrought iron by Messrs. Sharp, Stewart, & Co., and had, up to the time it failed, run 308,234 miles.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**North Staffordshire—*cont.***
1 December -	The crank-axle of a goods-engine was found to be broken in the Stoke goods-yard. The axle was made of Monkbridge iron, had been in use 10 years, and had run 63,183 miles. The fracture, which occurred in the web next to the boss, did not show any signs of flaw.
9 December -	The crank-axle of a goods-engine was found to be broken at Cresswell station. The axle was made of iron by Messrs. Cooper & Co., had been in use 4 years and 11 months, and had run 111,735 miles. The fracture, which occurred in the crank, showed no signs of previous flaw.
	Private Owners of Vehicles.
15 March -	Whilst a salt-van was travelling near Kirkburton Junction, on the London and North-western Railway, an axle broke under a waggon belonging to the Wheelock Iron and Salt Company. The axle was made of iron, the material being very defective.
17 June -	As a goods-train was travelling past Batley, on the London and North-western Railway, an axle of a salt-waggon belonging to Messrs. Park Brothers broke. The axle was of iron, and fractured owing to a bad flaw.
23 June -	As a goods-train was travelling near Wolverton, on the London and North-western Railway, both axles of a waggon belonging to the Cheshire Amalgamated Salt Company broke. The axles were of iron, and broke through flaws.
26 August -	Whilst a special coal-train was running near Bytham Station, on the Great Northern Railway, one of the axles of a waggon belonging to Mr. H. Fordham broke. The axle was made of wrought iron; it fractured near the centre; there was no flaw but the iron was highly crystallized.
2 September -	As a mineral-train was travelling near Nuneaton, on the London and North-western Railway, the rear axle of a waggon belonging to Messrs. G. E. Bevan & Co. broke. The axle was of iron, and the fracture, which occurred transversely, was due to a flaw.
8 September -	Upon examination of a train at Cardiff, on the Great Western Railway, a waggon belonging to the Gwaen-cae-Gurwen Company was found to have the journal of the axle burnt off. The axle was made of iron, but the maker and date of construction are unknown.
21 October -	Upon examination of a train at Didcot, on the Great Western Railway, a truck belonging to Messrs. D. Davies & Co. was found to have the journal of an axle burnt off. The axle was made of iron, but the maker and date of construction were unknown.
28 October -	While a truck belonging to Messrs. J. and H. Girling was standing in the Colchester sidings, Stratford, on the Great Eastern Railway, a journal of one of the axles (iron) was found to be twisted off.
1 November -	As a goods-train was travelling near Walsall, on the London and North-Western Railway, an axle of a waggon belonging to Messrs. T. and M. Dixon broke. The axle was made of iron, and the fracture, which occurred transversely, was due to a flaw.
5 November -	As a special coal-train was travelling near Wolverton, on the London and North-western Railway, a journal of a waggon belonging to the Joint Stock Coal Company twisted off owing to the axle running hot.
28 November -	The leading-axles of two waggons belonging to Mr. H. Fordham broke when running in a coal-train near Arlesey siding on the Great Northern Railway. They were made of wrought-iron, and the fractures exhibited flaws.
28 November -	One of the axles of a waggon belonging to Mr. D. L. Owen broke near Swansea, on the Great Western Railway. The axle was made of iron, and showed a pre-existent flaw. *See also page* 11.

SCOTLAND.

1876:	**Caledonian.**
1 October -	Whilst a goods-train was passing the Carlisle engine-shed an axle of a waggon broke. The axle was made of iron of good quality; the fracture occurred in one of the journals, and there was no appearance of any flaw at the place of fracture. The cause of failure is attributed to the waggon having been overloaded by the Clydesdale Iron Company to the extent of about 3 tons 9 cwts.
2 October -	As a passenger-train was leaving Muchalls station the driving-axle of the engine broke. The axle was made of steel of good quality, and was stamped "Vickers extra, 20.4.74;" the fracture occurred close to one of the wheel-seats, and the section showed that fully one half of it had been broken for some time; the axle had run 53,889 miles.
2 October -	When a special-train of sheep was passing Flemington siding, near Motherwell, the driving-axle of the engine broke close to the left-hand wheel. The axle was made of iron of good quality, at the Company's works, and was stamped "C. R., Iron, 16.12.69," and had run 154,060 miles. A portion of the section at the fracture was black, and had the appearance of having been broken for a short time before it finally gave way.

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876 :	**Caledonian—*cont.***
3 October -	When a special-horse-box-train from Perth to Glasgow was running between Greenloaming and Kinbuck the leading-axle of the engine broke. The axle was made of iron of good quality ; it fractured inside each wheel-seat, and from a portion of the sections being black it appeared as if the axle had been broken for a short time before it finally gave way; it was made by the Company, and was stamped "Caledonian Ry. St. Rollox, P.W. 70." It had, up to the time it failed, run 130,490 miles. *See also page* 18.
4 October -	When a mineral-train was passing Terminus Junction the trailing-axle of the tender of the engine broke. The axle was made of the best double-fagoted iron of good quality, by Messrs. Taylor & Co., and was stamped "Taylor's double-fagoted iron, March, 1861." A portion of fracture was black, and had the appearance of having been broken for a short time before it finally gave way.
14 October -	When an engine with four waggons attached to it was coming out of a siding at Lockerbie, its driving-axle broke. The axle was made by Messrs. Vickers & Co. in 1872, and was stamped "Vickers. Extra best steel." It fractured near to the wheel-seat, and there was no appearance of any flaw at the place of fracture ; the axle had run 122,503 miles.
3 November -	The driving crank-axle of an engine broke during shunting at St. Rollox. The axle was manufactured of Bessemer steel of very good quality by Messrs. Rowan & Co., Glagow, in 1872, and had run 117,766 miles ; it appeared to have been giving way for some time before it finally broke.
14 November -	Whilst an engine was shunting at Ross Junction its driving-axle broke. The axle was made of inferior iron by Messrs. Neilson & Co., Hyde Park Locomotive Works, Glasgow, and had been working since 1871, having run 114,046 miles.
23 November -	When an engine was leaving Lesmahagow with a mineral-train its driving-axle broke. It was made of iron by Messrs. Neilson & Co., Glasgow, in 1871, and had run 125,176 miles. The iron was quite hollow in the centre, where it broke, and appeared to have been gradually giving way.
2 December -	When a passenger-train reached Lochstrone the driving-axle of the engine broke. It was made of very good iron by the Bolton Iron and Steel Company in 1869, and had run 260,654 miles.
23 December -	As an engine was approaching Carnwath station its driving-axle broke. The axle was made of iron by Messrs. Neilson & Co., of Glasgow, in 1866, and had run 165,535 miles. The material was of ordinary quality, and from the appearance of the fracture the axle seemed to have been gradually giving way before it finally broke.
	Glasgow and South Western.
28 September -	During shunting operations at Mauchline the crank-axle of a goods-engine broke. The axle was made of Bessemer steel by Messrs. Cammell & Co., of Sheffield, and had, up to the time it failed, run 250,682 miles. There was a considerable flaw at the place of fracture.
	Highland.
4 November -	Soon after a passenger-train had started from Clachnaharry station the driving-axle of the engine broke. No further damage was done. The axle was made of crucible cast steel by Messrs. Vickers, Sons, & Co., of Sheffield. The fracture occurred between two of the eccentrics, and had the appearance of having been in the axle for some time, but it could not be detected with ordinary inspection ; the axle had run 116,600 miles.
	North British.
2 October -	Whilst a passenger-train was running near Falkirk station an axle of the rear break-van broke. The axle was made of iron, and the fracture occurred close to one of the wheel-seats. The cause of failure was attributed to wear and tear.
9 October -	When a goods-train was approaching Gorebridge the crank-axle of the engine broke. The axle was made of iron by the Granton Forge Company ; it was dated July 1869, and had worked 313,118 miles. The failure was attributed to wear and tear.
9 October -	During shunting operations at Stirling the leading-axle of the engine-tender broke. The axle was made of iron ; it broke at one of the journals close to the wheel-seat, and the failure was attributed to wear and tear.
20 October -	When a goods-train was running near Grahamston station an axle of a waggon broke at one of the journals. The axle was made of iron, but there was neither name nor date upon it. The wheels were stamped "Sandford & Owen, Rotherham, 1848." The cause of failure was attributed to defective material.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**North British—*cont.***
28 October -	As a passenger-train was approaching Walkerburn station the crank-axle of the engine broke. The axle was made of iron by Messrs. Cooper & Co., of Leeds, in May 1866, and had, up to the time it failed, run 318,817 miles; the failure was attributed to wear and tear.
7 November -	Whilst a goods-train was running near Croy an axle of a waggon broke inside one of the wheels. The axle was made of iron by the Kirkstall Forge Company, Leeds, and the failure was attributed to wear and tear.
24 November -	One of the axles of a waggon broke during shunting operations at Grahamstown. The axle was made of iron, and the failure was attributed to wear and tear.
7 December -	The axle of a waggon broke during shunting operations at Whifflet, on the Caledonian Railway, and slightly damaged the permanent way. The axle was made of bad iron, and had the appearance of having been broken for some time.
	Private Owners of Vehicles.
8 November -	A waggon belonging to Mr. A. Russell was found to have a broken axle, at Shawfield, on the Caledonian Railway. The axle was made of iron of inferior quality; the fracture occurred close to the wheel-seat, and a portion of the section was black, and had the appearance of having been broken for some time previously.
10 November -	Both axles of a trader's waggon broke when running in a goods train at Netherton, on the North British Railway. They were made of iron, and stamped "Garside, Leeds, Double fagoted." One of the axles failed through bad material, and the fracture of the other was the result of that failure.
23 December -	When an engine was leaving a train of empty waggons at Ross sidings on the Caledonian Railway an axle of Mr. A. Spencer's wagon broke at the boss. The axle was made of inferior iron, but there was no flaw in it.
23 December -	When an engine was backing a number of waggons into a siding at Lesmahagow Junction, on the Caledonian Railway, an axle of one of them belonging to Mr. A. Russell broke. The axle was made of coarse iron, but there was no trace of flaw in it.

IRELAND.

1876:	**Great Northern (Ireland).**
5 October -	Whilst a ballast-train was working between Enniskillen and Clones, the driving-axle of the engine broke. The axle was made of the best double-fagoted Yorkshire iron, by the Monk Bridge Iron Company, Leeds, and had, up to the time it failed, run 71,877 miles. The fracture occurred at one of the journals.
9 November -	The crank-axle of an engine broke when working a train between Lisnaskea and Lisbellaw. It was made of best Yorkshire iron by Messrs. Brown & Co., was put under the engine on the 29th of December 1871, and had, up to the time it failed, run 99,766 miles.
	Waterford and Limerick.
18 December -	When a passenger-train was running near Limerick the crank-axle of the engine broke at the boss of the wheel. The axle was made of iron by Messrs. Cooper, of Leeds, in 1864, and had run 268,958 miles.

Failures of Wheels.

RETURN of the FAILURES of WHEELS reported to the BOARD of TRADE during the Months of October, November, and December 1876.

ENGLAND AND WALES.

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Great Western.**
21 July -	Upon examination of a train at Kensington a loose wheel was discovered upon the axle of a waggon.
24 July -	Upon examination of a train at Gloucester it was discovered that the bolts were loose in the boss of one of Mansell's wood wheels, under a horse-box.
25 July -	Upon the examination of a train at Taunton a loose wheel was discovered upon the axle of a Bristol and Exeter van.
12 October -	Upon examination of a train at Oxford a loose wheel was discovered on the axle of a waggon.
16 October -	Upon the examination of a train at Maiden Newton it was discovered that the bolts were loose on the boss of one of Mansell's wheels under a composite carriage.
16 October -	Upon examination of a train at Nantyderry a loose wheel was found on the axle of a tender.
4 November -	Upon examination of a train at Swindon a loose wheel was discovered on the axle of a break-van.
8 November -	Upon examination of a train at Oxford a loose wheel was discovered upon the axle of a waggon.
11 November -	Upon examination of a train at Oxford the bolts were found loose on the boss of one of Mansell's wood wheels under a third-class carriage.
22 November -	Upon examination of a train at Paddington a loose wheel was discovered on the axle of a waggon.
5 December -	Upon examination of a train at Swindon a loose wheel was discovered on the axle of a waggon.
5 December -	Upon examination of a train at Bridgwater a wheel under a Bristol and Exeter waggon was discovered to have a split boss.
	Manchester, Sheffield, and Lincolnshire.
19 October -	Upon examination of a train at Wellington, on the Great Western Railway, a loose wheel was found on the axle of a waggon.
	Private Owners of Vehicles.
18 July -	Upon examination of a train at Reading, on the Great Western Railway, a loose wheel was discovered under a waggon belonging to Messrs. Toomer Brothers.
28 July -	Upon examination of a train at Mountain Ash, on the Great Western Railway, a loose wheel was discovered on an axle under a waggon belonging to the Cwm Aman Colliery Company.
9 August -	Upon examination of a train at Oxford, on the Great Western Railway, it was discovered that a waggon belonging to the West Cannock Colliery Company had one loose tyre and two split bosses.
10 August -	Upon examination of a train at Hodnet on the Great Western Railway, a loose wheel was discovered on an axle under a waggon belonging to Messrs. McNiel, Muller, & Co.
18 August -	Upon examination of a train at Chelsea, on the West London Extension Railway, a wheel was found to have a split boss under a waggon belonging to Messrs. Richards & Co.
27 August -	Upon examination of a train at Swindon, on the Great Western Railway, it was found that the spokes were loose in the boss of a wheel under a waggon belonging to Messrs. Read and Sons.
1 September -	Upon examination of a train at Moulsford, on the Great Western Railway, a loose wheel was discovered on an axle under a waggon belonging to the Skegby Colliery Company.
4 September -	Upon examination of a train at Llanvihangel, on the Great Western Railway, a loose wheel was discovered on an axle under a waggon belonging to the Nantyglo and Blaina Company.
19 September -	Upon examination of a train at Oxford, on the Great Western Railway, a loose wheel was discovered on an axle under a waggon belonging to the Radstock Coal and Waggon Company.
29 September -	Upon examination of a train at Neath Junction, on the Great Western Railway, a wheel was discovered to have a cracked boss, under a waggon belonging to the Aberdulais Company.
10 October -	Upon examination of a train at Bath, on the Great Western Railway, a split boss was discovered under a waggon belonging to Messrs. A. Gould & Co.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

ENGLAND AND WALES.

SCOTLAND.

FAILURES OF WHEELS.

Date of Failure.	Name of Company, with Nature and Cause of Failure.
1876:	**Private Owners of Vehicles—*cont.***
16 October -	Upon examination of a train at Reading, on the Great Western Railway, a loose wheel was discovered on the axle of a waggon belonging to Messrs. Nixon & Co.
20 October -	Upon examination of a train at Oxford, on the Great Western Railway, a loose wheel was discovered on the axle of a waggon belonging to Messrs. Stainer & Co.
5 December -	Upon examination of a train at Didcot, on the Great Western Railway, a loose wheel was discovered on the axle of a waggon belonging to Messrs. E. and W. Sturge.

SCOTLAND.

1876:	**North British.**
22 August -	On the arrival of a train at Greenock, the woodwork in the centre of one of the wheels of a carriage was found to be completely broken away.

RETURN of RAILS found fractured in the PERMANENT-WAY of PASSENGER RAILWAYS reported to the BOARD OF TRADE by the several RAILWAY COMPANIES during the Months of October, November, and December 1876.

ENGLAND AND WALES.

BROKEN RAILS.

Date when found Fractured.	Name of Company, with Nature and Cause of Fracture.
1876:	**Great Eastern.**
9 December -	A single-headed iron rail, weighing 65 lbs. per yard, was found broken in the up road between Chelmsford and Witham. The rail was manufactured by the Darlington Iron Company, had been in the road 14 years, and did not show any signs of flaw.
	Great Northern.
9 November -	A single-headed iron rail, weighing 82 lbs. per yard, was found broken in the Doncaster and Gainsbro' Railway, up line, near the 86¾ miles. The rail was made by the Darlington Iron Company, and had been in use 9½ years.
20 November -	A double-headed iron rail, weighing 72 lbs. per yard, was found broken in the East Lincolnshire Railway down line at 153¾ miles. The rail was made of iron by the Darlington Iron Company; had been in use 29 years, and had been turned.
22 November -	A double-headed steel rail, weighing 85¼ lbs. per yard, was found broken in the main up line at 4½ miles. The rail was made by the Ebbw Vale Company, had been in use nine years, and had been turned; there was a flaw in it.
24 November -	A double-headed iron rail, weighing 72 lbs. per yard, was found broken in the East Lincolnshire Railway down line, at 143½ miles. The rail had been in use about 29 years, and had been turned.
15 December -	Two double-headed iron rails, weighing 82 lbs. per yard, were found broken in the loop up line at 152½ miles. The rails were made of iron by the Darlington Iron Company, had been in use 9½ years, and had been turned.
23 December -	A double-headed iron rail, weighing 72 lbs. per yard, was found broken in the East Lincolnshire Railway down line, at 137 miles. The rail had been in use about 29 years, and had been turned.
28 December -	A double-headed iron rail, weighing 72 lbs. per yard, was found broken in the East Lincolnshire Railway down line, at 154 miles. The rail had been in use about 29 years, and had been turned.
	Great Western.
4 October -	A double-headed steel rail, weighing 80 lbs. per yard, was found broken near Pontypool Road. The rail was made by the Landore Siemens Steel Company, was laid down in March 1872, and had not been turned.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date when found Fractured.	Name of Company, with Nature and Cause of Fracture.
1876:	**Great Western—*cont.***
23 October -	A bridge rail, weighing 62 lbs. per yard, was found broken between the 249 and 249¼ mile posts, between Devonport and Saltash stations. The rail was made of iron.
28 October -	A steel bridge rail, weighing 68 lbs. per yard, was found broken near Box. The rail was made by the Dowlais Company, and was laid in July 1870.
31 October -	A steel rail, weighing 84 lbs. per yard, was found broken near Panteg. The rail was made by the Mersey Steel Company, and was laid in 1874.
14 November -	An iron bridge rail, weighing 60 lbs. per yard, was found to be broken near Leamington. The rail was made by the company, and was laid in 1867.
17 November -	A crossing steel rail of the bridge pattern, weighing 62 lbs. per yard, was found broken at St. Austell station.
	Lancashire and Yorkshire.
10 November -	A double-headed steel rail was found broken near the mouth of the tunnel at Bolton; it had not been turned.
28 November -	A double-headed steel rail was found broken in Upholland tunnel. The rail was made by the Ebbw Vale Steel and Iron Company, was put down in November 1869, and had been turned.
26 December -	A steel rail of the D section was found broken near the tunnel mouth at Bolton. The rail was made by the Mersey Steel and Iron Company of Liverpool in 1867, and was laid down in October of the same year, and had not been turned.
	London and North-western.
16 June -	A double-headed steel rail, weighing 84 lbs. per yard, was found broken near Lime Street station, Liverpool. It was laid in 1866, was manufactured at Crewe, and had been turned.
19 June -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near Port Dinorwic. It was manufactured by Messrs. Bolckow, Vaughan, & Co., was laid in May 1872, and had not been turned.
20 June -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near Nantlle. It was manufactured by Messrs. Bolckow, Vaughan, & Co., was laid in May 1871, and had been turned.
11 August -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near Milnthorpe. It was manufactured by the Blaenavon Iron Company, was laid in 1865, and had been turned.
28 August -	A double-headed steel rail, weighing 84 lbs. per yard, was found broken near Hopton Heath. It was manufactured by the Ebbw Vale Company, was laid in May 1875, and had not been turned.
29 August -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near Nantlle. It was manufactured by Messrs. Bolckow, Vaughan, & Co., was laid in October 1872, and had not been turned.
24 September -	A single-headed steel rail, weighing 84 lbs. per yard, was found broken near Roade. It was manufactured by the Ebbw Vale Company, and was laid in October 1873.
28 September -	A single-headed steel rail, weighing 84 lbs. per yard, was found broken near Boxmoor. It was manufactured by the Ebbw Vale Company, and was laid in 1873.
30 October -	A double-headed "V crossing" steel rail, weighing 84 lbs. per yard, was found broken at Waverton. It was manufactured at Crewe, was laid in 1872, and had not been turned.
4 November -	A double-headed steel rail, weighing 84 lbs. per yard, was found broken near Thatto Heath. It was manufactured by the Barrow Iron Company, was laid in 1870, and had not been turned.
14 November -	A double-headed steel rail, weighing 84 lbs. per yard, was found broken at Whitchurch. It was manufactured at Crewe, was laid in November 1875, and had not been turned.
15 November -	A double-headed steel rail, weighing 84 lbs. per yard, was found broken at Victoria station, Manchester. It was manufactured at Crewe, was laid in 1873, and had not been turned.
24 November -	A single-headed steel rail, weighing 84 lbs. per yard, was found broken at Broome. It was manufactured by the Ebbw Vale Company, and was laid in July 1875.
28 November -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken at Fidler's Ferry. It was manufactured at Crewe, was laid in 1874, and had not been turned.
	London and North-Western and Great Western Joint.
11 July -	A single-headed steel rail, weighing 84 lbs. per yard, was found broken near Hulton. The rail was manufactured by the Mersey Steel and Iron Company, and was laid in 1873.
17 September -	A double-headed steel rail, weighing 84 lbs. per yard, was found broken at Ledsham. The rail was manufactured by the Mersey Steel and Iron Company, was laid in 1871, and had been turned.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date when found Fractured.	Name of Company, with Nature and Cause of Fracture.
1876:	**London and North-Western and Great Western Joint—*cont.***
13 October -	A single-headed steel rail, weighing 84 lbs. per yard, was found broken at Chester. The rail was made by the Ebbw Vale Company, and was laid in 1874.
10 December -	A double-headed steel crossing, weighing 83 lbs. per yard, was found broken near Condover. The rail was made by Messrs. Guest & Co., and was laid in 1867.
	London and South-Western.
10 November -	A broken rail was found in a crossing at St. Denys Station. It was made out of an 80 lb. double-headed steel rail, and had been in the road about six years.
11 November -	A broken rail was found in a crossing at Forton Junction. It was made out of a 75 lbs. double-headed steel rail, and had been in the road about 12 years.
16 November -	A double-headed iron rail, weighing 80 lbs. per yard, was found broken in the line between Basingstoke and Micheldever stations; it had been in the road 16 years.
24 November -	A broken wing rail of a crossing was found in the line at Hampton Court Junction. It was a double-headed steel rail; had been in the road about four years, and had been turned.
25 November -	A double-headed iron rail, weighing 80 lbs. per yard, was found broken in the line near Surbiton station. The rail had been in the road eight years, and had been turned.
25 November -	A broken crossing was found in the line at Yeovil Junction. It was made out of 80 lbs. steel rails, and had been in the road about two years.
29 November -	A double-headed steel rail, weighing 80 lbs. per yard, was found broken in the line near Clapham junction. The rail had been in the road about ten years, and had been turned.
26 December -	A broken rail was found in the line near St. David's station, Exeter. It was a switch tongue cut from an 80 lb. double-headed steel rail, and had been in the road about 10 months.
	London, Brighton, and South Coast.
9 March -	A double-headed steel stock rail, weighing 78 lbs. per yard, was found broken in the down Victoria siding at East Croydon. The rail was made by the Ebbw Vale Company in 1870, and had not been turned.
15 March -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in New Cross Yard. It had not been turned.
18 March -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in the Balcombe tunnel. The tyre was made by the Bessemer Steel Company in 1874, and had not been turned.
4 April -	A double-headed stock steel rail, weighing 78 lbs. per yard, was found broken in the down local line at Norwood Junction. The tyre was made by the Mersey Steel Company in 1871, and had not been turned.
4 April -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in Battersea Yard. The tyre was made by the Stockton Rail Mill Company in 1872, and had been turned.
5 April -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the engine yard at New Cross. The rail was made by the Stockton Rail Mill Company in 1872, and had been turned.
28 April -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in the down line between Balcombe and Haywards Heath. The rail was made by the Ebbw Vale Company in 1874, and had not been turned.
5 May -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the Crystal Palace tunnel. The rail was made by the Stockton Rail Mill Company in 1872, and had been turned.
16 May -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in the main line between New Cross and the Bricklayers Arms Junction. The rail was made by the Ebbw Vale Company in 1874, and had not been turned.
28 May -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in Battersea Yard. The rail was made by the Mersey Steel Company in 1871, and had been turned.
10 June -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in the up main line at Three Bridges. The rail was made by the Ebbw Vale Company in 1874, and had not been turned.
28 June -	A double-headed steel crossing rail, weighing 78 lbs. per yard, was found broken in the main line at Croydon. The rail was made by the Ebbw Vale Company in 1874.
29 July -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken between Preston and Brighton. The rail was made by the Rhymney Iron Company in 1857, and had been turned.
15 August -	A double-headed crossing rail, weighing 75 lbs. per yard, was found broken at Berwick (Strure's patent).
11 October -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in Victoria Station Yard. The rail was made by the Cammell Steel Company in 1866, and had been turned.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date when found Fractured.	Name of Company, with Nature and Cause of Fracture.
1876:	**London, Brighton, and South Coast—*cont.***
29 October -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in the Battersea Yard. The rail was made by the Mersey Steel Company, and had been turned.
28 November -	A double-headed steel rail, weighing 78 lbs. per yard, was found broken in the "in" road at London Bridge. The rail was made by the Mersey Steel Company in 1871, and had been turned.
23 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the down line at Kingston. The rail was made by the Stockton Rail Mill Company in 1871, and had been turned.
29 December -	Two double-headed iron rails, weighing 75 lbs. per yard each, were found broken in the line between Burgess Hill and Hassocks Gate. The rails were made, one by the Tredegar Iron Company and the other by Messrs. Crawshay in 1856, and had been turned.
	London, Chatham, and Dover.
24 November -	A double-headed steel rail, weighing 72 lbs. per yard, was found broken in the up main line at Walworth. The rail had been in the line eight years, and had not been turned. The fracture showed no signs of a previous flaw.
24 November -	A double-headed steel rail, weighing 83 lbs. per yard, was found broken in the up Metropolitan line at Camberwell. The rail was made by Messrs. Lloyds, Forster, & Co., had been in the line about 12 years, and had been turned. The fracture showed no signs of a previous flaw.
12 December	A double-headed iron rail, weighing 82 lbs. per yard, was found broken in the down road at Bekesbourne. The rail was made by the Darlington Iron Company, and had been in the road 11 years.
19 December -	A double-headed steel rail, weighing 72 lbs. per yard, was found broken in the Holborn Station Yard. The rail was supplied by the Dowlais Iron Company, had been in the road about three years, and had not been turned. The fracture showed no signs of a previous flaw.
21 December -	A double-headed steel rail, weighing 72 lbs. per yard, was found broken near Blackfriars. The rail was made by the Dowlais Iron Company, had been in the road three years, and had been turned. The fracture did not show any signs of previous flaw.
21 December -	A double-headed steel rail, weighing 72 lbs. per yard, was found broken near Loughboro' Road Station. The rail was made by the Landore Siemens Steel Company, had been in the road 2½ years, and had not been turned. The fracture showed no signs of previous flaw.
	Manchester, Sheffield, and Lincolnshire.
20 December -	A single-headed steel rail, weighing 64 lbs. per yard, was found broken in the Woodhead down tunnel, near to Dunford. The rail was made by the Manchester Steel and Iron Company, was put in the road in 1870.
	Metropolitan.
20 December -	A Dowlais steel rail of Vignoles section was found broken in the down line at King's Cross.
	Metropolitan District.
21 October -	A broken crossing was discovered in the line at West Brompton Station. It was manufactured of cast steel by Messrs. Vickers, Sons, & Co., and had been in the road upwards of five years. There was no flaw at place of fracture.
	Midland.
14 October -	A single-headed steel rail, weighing 82 lbs. per yard, was found broken near Shipley. The rail was manufactured by the Barrow Steel Company, and had been in use three years.
21 October -	A single-headed steel rail, weighing 82 lbs. per yard, was found broken near Oakley. The rail was manufactured by the Manchester Steel Company, and had been in use four years.
28 October -	A double-headed iron rail, weighing 83 lbs. per yard, was found broken near Harpenden. The rail was manufactured by Messrs. Bolckow, Vaughan, & Co., had been in use four years, and had not been turned.
30 October -	A single-headed steel rail, weighing 82 lbs. per yard, was found broken near New Biggin. The rail was manufactured by the Barrow Steel Company, and had been in use three years.
6 November -	A double-headed iron rail, weighing 80 lbs. per yard, was found broken near Eckington. The rail was manufactured by the Ebbw Vale Company, had been in service eight years, and had been turned.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date when found Fractured.	Name of Company, with Nature and Cause of Fracture.
1876:	**Midland—*cont.***
18 November -	A double-headed iron rail, weighing 83 lbs. per yard, was found broken near Sandal and Walton. The rail was manufactured by the Normanton Iron Company, had been in use seven years, and had been turned.
20 November -	A double-headed iron rail, weighing 83 lbs. per yard, was found broken near Loughborough. The rail was manufactured by the Tredegar Iron Company, had been in service one year, and had not been turned.
24 November -	A double-headed iron rail, weighing 83 lbs. per yard, was found broken near Shipley Gate. The rail was manufactured by the Tredegar Iron Company, had been in use three years, and had been turned.
25 November -	A double-headed iron rail, weighing 83 lbs. per yard, was found broken near Langley Mill. The rail was manufactured by the Tredegar Iron Company, had been in use three years, and had been turned.
30 November -	A single-headed steel rail, weighing 82 lbs. per yard, was found broken near Kettering Junction. The rail was manufactured by Messrs. Bolckow, Vaughan, & Co., and had been in use three years.
6 December -	A double-headed iron rail, weighing 83 lbs. per yard, was found broken near Ambergate. The rail was manufactured by the Park Gate Iron Company, had been in use two years, and had not been turned.
9 December -	A single-headed steel rail, weighing 83 lbs. per yard, was found broken near Shipley. The rail was made by the Bessemer Steel Company, Sheffield, and had been in use three months.
13 December -	A single-headed steel rail, weighing 83 lbs. per yard, was found broken near Unstone. The rail was manufactured by Messrs. Wilson, Cammell, & Co., and had been in use one year.
27 December -	A single-headed steel rail, weighing 82 lbs. per yard, was found broken near Isham. It had been in use three years, and was manufactured by Messrs. Bolckow, Vaughan, & Co.
	North-Eastern.
31 October -	A double-headed iron rail, weighing 82 lbs. per yard, was found broken in the up line near Seaton Station. The rail was manufactured by the Stockton Rail Company, was laid down 3½ years ago, and had been turned; the fracture did not exhibit any flaw.
3 November -	A double-headed iron rail, weighing 82 lbs. per yard, was found broken in the down line near Aycliffe Station. The rail was manufactured by the Darlington Iron Company, was laid down 9½ years ago, and had been turned.
11 December -	A double-headed iron rail, weighing 82 lbs. per yard, was found broken in the single line near Trinity Junction between East and West Hartlepool. The rail was manufactured by the Stockton Rail Mill Company, was laid down four years ago, and had not been turned; the fracture did not exhibit any flaw.
	North London.
21 October -	A double-headed steel rail, weighing 84 lbs. per yard, was found broken in the line between Shoreditch and Haggerston. The rail had been in use for 18 months. The cause of fracture was its having been cracked when punched.
	North Staffordshire.
4 November -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the up main line between Trentham and Barlaston stations. The rail was supplied to the Company in 1861 by the Ebbw Vale Company, had been in wear 15 years, and had been turned about two years.
	Sheffield and Midland Committee.
2 October -	A double-headed steel rail, weighing 63 lbs. per yard, was found broken in the up line at Hyde Junction. The rail was made by the Manchester, Sheffield, and Lincolnshire Company, was put in the road in February 1868, and had not been turned. The cause of breakage was its having been damaged in punching.

Date when found Fractured.	Name of Company, with Nature and Cause of Fracture.
	SCOTLAND.
1876:	**Caledonian.**
27 October -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near the 183¾ mile post from Carlisle (Forfar station). The rail was stamped "Consett, 1873," was put in the line in 1873, and had been turned; there was a splinter on the under side.
31 October -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line near the 47¾ mile-post from Carlisle (Beattock station). The rail was stamped "Consett, 1873," was put in the line in June 1874, and had been turned. There was no flaw in it.
11 November -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near the 14½ mile-post on the Greenock section (Langbank nearest station). The rail was stamped "S. R. M. Co., 1872," was put in the line May 1872, and had been turned. There was no flaw in it.
14 November -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line near the 183¾ mile-post from Carlisle (nearest station Forfar). The rail was stamped "Consett, 1875," was put in the line in 1875, and had not been turned. There was no flaw.
21 November -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line on the Edinburgh branch, near the 94¼ mile-post from Carlisle (nearest station Curriehill). The rail was stamped "Glasgow, 1869," was put in the line May 1869, and had been turned. There was a flaw in it.
5 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line on the Lesmahagow branch, near the 1 mile-post (nearest station Hamilton Road). The rail was stamped "S. R. M. Co., 1870," was put in the line March 1871, and had been turned. There was no flaw.
8 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near the 1 mile-post on the Lesmahagow branch (nearest station Hamilton Road). The rail was stamped "A. I. Co., 1866," and had been turned. It did not show any previous flaw.
8 December -	A double-headed steel rail, weighing 75 lbs. per yard, was found broken in the line on the Cleland and MidCalder branch near the 3¼ mile post (nearest station, Bellside). It was stamped "Mersey Steel Co., 1866," had not been turned, and showed no signs of flaw.
9 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line on the Greenock section, near the 9¾ mile-post (nearest station Houston). The rail was stamped "S. R. M. Co., 1870," and was put in the line March 1871. There was no flaw.
18 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line near the 14 mile-post on the Greenock section (nearest station Langbank). The rail was stamped "S. R. M. Co., 1870," and had been turned. The fracture showed no signs of any previous flaw.
19 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken near the ¾ mile-post on the Lesmahagow branch (nearest station Hamilton Road). The rail was stamped "Darlington Iron Co., 1873," and had been turned. The fracture showed no signs of previous flaw.
24 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line near the 90½ mile-post from Carlisle (Holytown station). The rail was stamped "S. R. M. Co., 1872," was put in the line in December 1872, and had been turned.
28 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken in the line near the 114¼ mile-post from Carlisle (nearest station Bannockburn). The rail was stamped "S. R. M. Co., 1870," was put in the line in 1871, and had been turned.
	Glasgow and South-Western.
6 November -	A double-headed rail, weighing 75 lbs. per yard, was found broken in the down-line near the 53 mile-post from Glasgow. The rail was made of malleable iron, was laid in 1867, and had been turned.
8 November -	A double-headed rail, weighing 75 lbs. per yard, was found broken in the up line near the 53½ mile-post from Glasgow. The rail was made of malleable iron, was laid in 1867, and had not been turned.
	Glasgow, Barrhead, and Kilmarnock Joint.
23 October -	A double-headed steel rail was found broken on the incline near Kilmaurs station. The rail was made of Bessemer steel, was laid in 1873, and had not been turned.

Date when found Fractured.	Name of Company, with Nature and Cause of Fracture.
1876:	**North British.**
2 October -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken, 22 inches from the end, in the up line near Upper Bathgate station. The rail was made by Messrs. Hopkins, Gilkes, & Co., was laid down in 1872, and had been turned.
5 October -	A double-headed steel rail, weighing 75 lbs. per yard, broke at Queen Street station, Glasgow. The rail was made by Messrs. John Brown & Co., of Sheffield, was laid down in 1867, and had been turned. *See also page* 19.
12 October -	A double-headed steel rail, weighing 75 lbs. per yard, was found broken in crossing, about 18 inches from the end, at Ravenswood junction, near St. Boswell's. The rail had been 2½ years in the line, and had not been turned.
18 October -	A double-headed rail, weighing 75 lbs. per yard, was found broken, 7 inches from the end, about 200 yards west of Auchendinny station. The rail had been in use since 1872, and had not been turned.
19 October -	A double-headed rail, weighing 75 lbs. per yard, was found broken in the down line, 400 yards north of Arniston siding, near Gorebridge station. The rail was marked "H. & Coy.," had been in the road 18 months, and had been turned.
20 October -	A flat-bottomed rail, weighing 60 lbs. per yard, was found broken through the fish-bolt holes, near Brinkburn station. The rail was marked "C. I. Co., N. C. Ry., 60 lbs.," and was laid down in 1870.
20 October -	A double-headed Barrow steel rail, weighing 75 lbs. per yard, was found broken, about 18 inches from the end, in the crossing at Ravenswood junction, near St. Boswell's station. The rail had been in use nine years, and had not been turned.
21 October -	A flat-bottomed rail, weighing 60 lbs. per yard, was found broken, 10 feet from the end, near Brinkburn station, Northumberland Central section of the North British Railway. The rail had been in use since 1870. It was marked "L. W. B. N. C. R., 60 lbs., 1866."
25 October -	A double-headed rail, weighing 75 lbs. per yard, was found broken, 4½ feet from the end, in the up line, about 400 yards south of Galashiels station. The rail had been three years in the road, and had been turned.
27 October -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken, six feet from the end, in the down line at the Abbeyhill station, Edinburgh. The rail was made by the Consett Iron Company, had been in the line five years, and had been turned.
13 November -	A double-headed iron rail, weighing 70 lbs. per yard, was found broken, 5 feet 10 inches from the end, in the up-line in Whitehill cutting, about half a mile south of Niddrie junction. The rail had been in the line 12 years, and had been turned.
9 December -	A double-headed rail, weighing 75 lbs. per yard, was found broken in two places, about three quarters of a mile east of Linlithgow station. The rail, which was made by the Glasgow Iron Company, was laid in the line in 1862, and had been turned.
12 December -	A double-headed steel rail, weighing 75 lbs. per yard, was found broken in three places at Granton. The rail was marked "Barrow steel," had been in use three years, and had not been turned.
15 December -	A double-headed rail, weighing 75 lbs. per yard, was found broken at Greenhill. It was made by the Darlington Iron Company, was put into the road in 1870, and had not been turned.
16 December -	A double-headed rail, weighing 75 lbs. per yard, was found broken in a crossing in the down line, near Linlithgow station. The rail was made of Dowlais steel, had been in the line one year, and had not been turned.
19 December -	A single-headed rail, weighing 60 lbs. per yard, was found broken about three quarters of a mile south of Brinkburn station. It was laid down in October 1870, and was marked "C. I. Co., 1869."
19 December -	A double-headed rail, weighing 75 lbs. per yard, was found broken about half a mile north of Shankend station. It was laid down in April last, and had not been turned; it was marked "West Cumberland steel."
22 December -	A double-headed iron rail, weighing 75 lbs. per yard, was found broken, two feet from the end, in the down line at Cowlairs West Junction. The rail was made by the Tredegar Iron Company, had been in use about two years, and had not been turned.

ENGLAND AND WALES.

Trains running through Level-crossing Gates, over Cattle, and other Obstructions.

RETURN of CASES reported to the BOARD OF TRADE during the Months of October, November and December 1876, of TRAINS RUNNING THROUGH LEVEL-CROSSING GATES, OVER CATTLE STRAYING ON RAILWAYS, or other OBSTRUCTIONS, but in which no Personal Injury was caused, nor any damage done to the Trains or Permanent-Way.

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.
1876:	**Cambrian.**
25 October -	A pony whilst straying on the line near Ynys-Las station was knocked down by a passenger-train and killed.
	Great Eastern.
23 September -	The gates of a level-crossing near Pulham Market were run through and broken by a goods-train. Caused by the gateman having the gates across the line when the train arrived.
27 September -	The gates of the Basham level-crossing between Fakenham and Walsingham were run through and broken by a passenger-train from Norwich to Wells. Caused by the gateman having the gates across the line when the train arrived.
8 October -	A passenger-train ran over and killed two bullocks which had strayed upon the line between Heacham and Snettisham stations. No part of the train left the rails. The cattle got on the line through an occupation level-crossing gate which had been left open.
12 October -	The gates of the Crossingfield level-crossing near Pulham Mary were run through and broken by a passenger-train. Caused by the gateman having the gates across the railway when the train arrived.
12 October -	At Stratford when some sheep were being loaded into a truck one of them escaped, and running on to the main line was run over and killed by a passenger-train.
19 October -	When a passenger-train was running between Mellis and Eye the engine struck and killed a donkey which was straying on the railway. Caused by a drove crossing-gate having been left open by some person.
27 October -	Some sheep got upon the railway at Cambridge, through a gap in the fence caused by a rail having been broken, and one sheep was run over and killed.
10 November -	A mixed-train ran over and killed a heifer which was straying on the railway, between Swavesey and St. Ives, the beast having run along the line instead of crossing over at a level-crossing.
10 November -	The gates of the Dullingham Road level-crossing, near Newmarket, were run through and broken by a coal-train. Caused by the gateman having the gates across the line when the train arrived.
25 November -	One of the gates of the Amwell Road level-crossing at Ware was run through and broken by a passenger-train. Caused by the gateman having the gates across the line when the train approached, and being then able to open only one gate.
28 November -	The level-crossing gates at George Lane station were run through and broken by a carriage-train. Caused by the gateman having the gates across the line when the train arrived.
29 November -	One of the gates of the level-crossing at Thurston station was struck and broken by a passenger-train from Haughley. Caused by the gateman not properly fastening the gate open.
2 December -	One of the gates of the Slade End level-crossing near Chatteris was run through and broken by a cattle-train. Caused by the gateman having the gates across the line when the train approached, and being then able to open only one gate in time.
2 December -	Between Witham and Wickham stations a horse was run over and killed by a passenger-train. Caused by the horse straying upon the railway at an occupation-crossing, the gate of which had been left open by some person.
8 December -	A horse and cart were run into by a train at an occupation level-crossing near Silvertown station, the cart being broken and the horse killed. Caused by the horse being unable to draw the cart over the railway, and the person in charge not giving any intimation to the company's servants.
20 December -	In consequence of the gateman having the gates across the line at the Thorpe level-crossing, near Burnham, they were run through and broken by a train.
21 December -	In consequence of the gateman having the gates across the line at the level-crossing at Earsham station, they were run through and broken by a goods-train.
25 December -	The gates of a level-crossing between Saxmundham and Leiston were run through and broken by a down-train in consequence of the gateman having the gates across the line when the train arrived.
27 December -	The gates of a level-crossing near Wroxham were run through and broken by a passenger-train in consequence of the gateman having the gates across the line when the train arrived.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.
1876:	**Great Northern.**
27 December -	At Murrow Station a pony and cart strayed on to the line from the goods yard, and were struck by the engine of a coal-train. The pony was killed and the cart destroyed, but no damage was done to the train.
	Great Western.
5 October -	A horse and cart that were being driven across the line at Plymouth Docks were run into by a train; the cart was damaged and the horse slightly injured.
13 October -	Two cows that had strayed on the line near Newnham Bridge were run over and killed by a goods-train.
14 October -	The level-crossing gates near Derwydd Road were run through and damaged by a London and North-western goods-train.
11 November -	Two calves that had strayed on the line at Devizes were run over and killed by a goods-train.
1 December -	A goods-train ran through and broke a level-crossing gate near Mortimer which had been blown foul of the line.
2 December -	A heifer that had strayed on the line between Savernake and Marlborough was struck by an engine and injured.
4 December -	Two horses, which were being driven across the line at an occupation crossing at Ely were knocked down by a train, and one of them was killed.
27 December -	The level-crossing gates at Ironbridge were run through and broken by a train.
	Lancashire and Yorkshire.
12 October -	Three horses strayed on the line early in the morning, two of which were knocked down and killed by a goods-train near Radcliffe Bridge Station. The horses got upon the line at a private siding owned by Messrs. Knowles and Sons, and from this siding on to the main line.
20 October -	Two boys were driving cattle over Raven Meads occupation-crossing near Formby when one of the cows was run over and killed by a passenger-train.
11 November -	One sheep was killed and three injured by a passenger-train near Littleborough; the sheep were said to have got on the line at a level-crossing near Littleborough Station.
14 November -	A horse was killed on the line near Whitehall Road signal cabin, Cleckheaton. It has not been ascertained how the horse got upon the line.
27 November -	A horse was knocked down and killed by a ballast-train at Darton. The horse had been shunting waggons at a private siding, then walked on to the main-line as the ballast-train was passing.
23 December -	Fifteen sheep were killed by a passenger-train at Blowick near Southport, having got upon the line through the fence, which was in proper order, but the sheep being very small ones were able to get through.
26 December -	In consequence of a high wind the level-crossing gates at Shaw were lifted over the stops and could not be got back in time to allow a passenger-train to pass without breaking them.
	London and North-Western.
16 October -	As a goods-train was travelling near Trench crossing it came in contact with the gates, which had been forced open by a man who required to go through with his horse and cart but failed to close them again in a proper manner. One gate was badly and one slightly damaged, also the engine.
25 October -	As a coal-train was travelling between Wem and Prees it ran over and killed a sheep which had strayed on the line.
28 October -	As a special cattle-train was travelling near Harlesden the engine ran through and broke the level-crossing gates.
13 November -	As an engine was travelling past Clipstone it came in contact with the crossing-gates, which were closed across the line, and broke them.
21 November -	As a passenger-train was travelling between Ynys and Brynkir it ran over and killed a horse which had strayed on the line.
25 November -	As a passenger-train was travelling near Lichfield it ran through some beasts which were being driven across the line, killing one of them.
15 December -	Whilst a train was passing Brigham one of the crossing-gates came in contact with the train and was broken, in consequence of the signalman omitting to properly secure the gate.
17 December -	Whilst a passenger-train was travelling near Flimby it ran over a waggon-sheet which it was supposed had been maliciously placed on the line.
19 December -	As a passenger-train was travelling near Waenavon it ran over and killed a sheep which had strayed on to the line.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.
1876 :	**London and North-Western—*cont.***
19 December -	As a goods-train from Leighton was travelling past Grovesbury level-crossing (Dunstable Branch) it ran through and broke the crossing-gates.
20 December -	As a herd of cattle was being loaded at Wednesfield Heath one of them jumped from the cattle-dock, and running up the line was killed by a passenger-train at Darlaston Green.
	London and North-Western and Great Western Joint.
8 October -	As a goods-train was travelling past Frodsham junction it knocked down and killed a sheep which had strayed on to the line.
14 November -	As a Great Western passenger-train was travelling near Upton it ran over and killed a cow which had strayed on to the line.
	London, Brighton, and South Coast.
1 July -	A level-crossing gate near Horsham was run through by a passenger-train and broken. The accident was caused by the carelessness of the gatekeeper.
	London, Chatham, and Dover.
9 November -	A passenger-train ran through the level-crossing gates at Offham, near Wrotham station, breaking them to pieces. The head-lamp of engine was damaged. The signalman was reported as having been asleep at the time of the accident.
	Maryport and Carlisle.
24 October -	A cow was run over and killed by a mineral-train near Aspatria station.
	North Eastern.
10 October -	As an engine was proceeding near Armfield it knocked down and killed a horse which was being taken over the line at a private level-crossing.
21 October -	As a mineral-train from York to Darlington was proceeding near Alne it ran through a flock of sheep which had strayed upon the line, killing eight of them.
23 October -	A passenger-train proceeding near Catterick Bridge ran through a flock of geese which had strayed upon the line, killing three of them.
28 October -	As an engine was proceeding near Howdon it ran through a flock of sheep which had strayed upon the line, killing 19 of them.
25 November -	As a goods-train was proceeding near Thirsk it knocked down and killed a horse which had strayed upon the line.
27 November -	Whilst a passenger-train was proceeding near Burley it knocked down and killed four beasts which had strayed upon the line.
30 November -	As a ballast-train was proceeding near Micklefield the engine knocked down and killed a horse which was drawing some waggons in a siding adjacent to the main line.
4 December -	As a light mail-train was proceeding near Trimdon it knocked down and killed a horse which had strayed upon the line.
7 December -	As a horse and cart were being driven over a level-crossing at Warrenby near Redcar they were struck by the engine of a mineral-train. The cart was damaged and the horse seriously injured.
13 December -	As a passenger-train was proceeding between Haswell and Thornley it knocked down and killed a sheep which had strayed upon the line.
15 December -	As a mineral-train was proceeding near Bardon Mill it knocked down and killed a cow which had strayed upon the line.
	South-Eastern.
23 December -	The crossing-gates near Warlingham station were run through and broken by a train owing to the gateman being unable to open them on account of their being blocked by snow.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.
	SCOTLAND.
1876:	**Caledonian.**
20 October -	Several lambs which were grazing on the farm of Balwyllo near Bridge of Dun pushed through the fence and strayed on to the line; one of them was run over by a goods-train and killed.
27 October -	When several cattle were being driven across the line at a private occupation-crossing, about half a mile south of Bannockburn, one of them was run over and killed by a mineral train.
28 October -	A heifer which had strayed on to the line at Mossband private occupation-crossing near Gretna was run down by a goods train, and killed. The gate of the crossing had been left open either by the farmer or his servants.
30 October -	Five calves which had strayed on to the line at Palnure station, Portpatrick line, were run over and killed, it was supposed by an express train. There was a sleeper-fence at the place, but one of the sleepers was out, and it was thought that the animals got access to the line through the opening.
3 November -	Part of a flock of sheep which had strayed on to the line near Ponfeigh were run down by a mineral-train. Three were killed and four injured. It was supposed that they had got up on the end of a stone wall which divides two farms, several stones of which were displaced, and had leaped on to the railway.
6 December -	A mare which ran off at Kingsmoor level-crossing, Carlisle, was knocked down by a passenger-train and killed.
8 December -	Ten cows which were landed at Forfar were put into the cattle-bank yard, the door of which was said to have been found open, and all the cows strayed on to the line, and one of them was run down and injured by a goods-train near Forfar junction.
	Glasgow and South-western.
1 November -	Two sheep which had strayed on to the line, through the carelessness of a farmer, were run over and killed by a pilot-engine, near Kilmalcolm.
	Glasgow, Barrhead, and Kilmarnock Joint.
23 November -	A mineral-train belonging to the Glasgow and South-western Company ran over a wood gate which had been maliciously placed upon the line near Kilmaurs station by some person unknown. No one hurt, nor any damage done.
	IRELAND.
1876:	**Belfast and Northern Counties.**
23 October -	Two sheep were run over and killed by a passenger train near Ballykelly when straying on the line from an adjacent farm.
13 November -	A pig was run over and killed by a down passenger train near Castlerock station; it came through accommodation gates in charge of a farmer.
	Waterford and Limerick.
27 December -	A mixed-train ran into some cattle near Kilsteelan station, and three waggons left the rails, but no damage was done.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Return of the Damage done to the Permanent-Way of Railways by Floods, reported to the Board of Trade during the months of October, November, and December 1876.

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.
1876:	**Great Western.**
9 October -	Owing to heavy floods the supports of a bridge near Kington were washed away. The traffic was delayed, but no further damage was done.
4 December -	The line at Durston was flooded in consequence of the heavy rains, and the permanent way was slightly damaged.
4 December -	Owing to the heavy rains the line between Rodwell and Plymouth was flooded, and all traffic was delayed for about three hours.
5 December -	A land slip occurred at Harbury in consequence of the heavy rains, and blocked the up line.
20 December -	The heavy rains flooded the line at Langport, Dunball, and between Chard and Ilminster, but the traffic was not interrupted.
21 December -	A land slip occurred near Stourbridge, in consequence of heavy rains, and the down line was blocked for about two hours.
27 December -	In consequence of a snowstorm and rain the line was flooded between Mountain Ash and Aberdare.
29 December -	In consequence of the heavy rains a land slip occurred between Chippenham and Dauntsey, and single line had to be worked between those places.
	Somerset and Dorset.
5 December -	A slip of earth took place near the Midsomer Norton station, and the block and speaking wires were broken. The wires caught the spring balances of an engine, liberated the steam, and caused it to fail. No one was hurt.

SCOTLAND.

1876:	**Caledonian.**
14 November -	As a goods-train was passing over Dunning Burn Bridge the bridge was swept away by a great flood, and 16 waggons fell in the gap. No one was hurt. About 50 feet in length of a 10 feet high embankment was also washed away.
14 November -	A land slip took place in the cutting on the down side of the line near the 122 mile post from Carlisle, a little to the north of Bridge of Allan station. Two rails length of one line of rails were covered by about three feet of earth. No further damage was done.
14 November -	Owing to the heavy rains portions of the Scottish North-eastern section of the line was flooded. Between Guthrie and Glasterlaw there were about six feet of water, and single line had to be worked for a time between Dubton and Craigo in consequence of the ballast having been washed from under the sleepers at Logie viaduct, and trains had to be run slowly at various points between Craigo and Fordoun because of the water on the line.
15 November -	The railway bridge crossing the burn at Forfar Road gates, near Eassie, was submerged by the heavy rains. The traffic was suspended for about five hours in consequence.
3 December -	A quantity of earth fell from the north side of Mill Hole Cutting, situated between Newtyle and Auchterhouse, on to the rails.
22 December -	Hallgreen Bridge near Bervie was washed away by a flood.
22 December -	There was a very severe storm of wind and rain near Lawrencekirk, which with melted snow flooded the cuttings both to the north and south thereof. The rails at several places were covered with water and the traffic was suspended in consequence. Little damage was done to the road. In several places the ballast was washed from under the end of the sleepers, and single line had to be worked till the repairs of the roads were completed.
26 December -	Hallgreen Bridge, which had been temporarily repaired after the damage of the 22nd inst., was again carried away by storm.
26 December -	Several telegraph-posts fell, in consequence of a snowstorm, between Bridge of Dun and Guthrie, and both lines were blocked.

Part I.—Return of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.
	Great North of Scotland.
4 December -	In consequence of heavy floods in the Haughs of Craigowen, about 200 yards of the ballasting on the Deeside line between Glassel and Torphins stations were washed away, and some little delay occurred to the trains.
	North British.
21 December -	The embankment below the up line of rails between Trinity and Granton stations, to the extent of about 45 lineal yards, was washed away by the sea during a storm which prevailed at the time.

IRELAND.

1876:	**Belfast and County Down.**
4 December -	Owing to a flood of water which flowed over the permanent way of the Downpatrick, Dundrum, and Newcastle Railway, the line had to be closed for traffic. The water on the 7th inst. was four feet over the rail in some places.
6 December -	From the same cause the traffic had to be suspended beyond Crossgar, the next station to Downpatrick, near which last-named place the water was three feet above rail level.
	Dublin, Wicklow, and Wexford.
6 December -	A heavy land slip occurred in the slope of the cutting on the north side of Killiney station.

PART II.

RETURN of ACCIDENTS to PASSENGERS from their own want of Caution, PERSONS passing over LEVEL-CROSSINGS, TRESPASSERS, and others, reported to the BOARD OF TRADE by the several Railway Companies during the Months of October, November, and December 1876.

ENGLAND AND WALES.

Accidents to Passengers from their own want of caution, &c.

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Brecon and Merthyr.**								
3 Dec. -	A woman, when trespassing on the line near Darran station, was knocked down by a train, and died from the injuries sustained - - - -	–	–	–	–	1	–	–	–
	Cambrian.								
20 Oct. -	A man fell down a cattle creep whilst walking on the line near Abermule station, and had his leg broken - - - - - - -	–	–	–	–	–	1	–	–
16 Dec. -	A trespasser was run over and killed by a train near Towyn station - - - - - -	–	–	–	–	1	–	–	–
	Total, Cambrian - - -	–	–	–	–	1	1	–	–
	Furness.								
26 Oct. -	A passenger at [Corkickle station, Whitehaven, got out on the wrong side of a train, and was run over by a passing mineral-train, receiving such severe injuries that he shortly afterwards died - -	1	–	–	–	–	–	–	–
1 Dec. -	A passenger was knocked down and run over by a passenger-train at Furness Abbey, and was cut about the head and bruised. He was attempting to cross the line instead of going by the subway -	–	1	–	–	–	–	–	–
23 Dec. -	A passenger alighted from a train at Cark station, and, instead of leaving the platform by the gate, he attempted to cross the line, but stumbled and fell on the rails, when he was run over by a train and killed - - - - - - - -	1	–	–	–	–	–	–	–
	Total, Furness - -	2	1	–	–	–	–	–	–
	Great Eastern.								
30 Sept. -	At Fenchurch Street station a passenger alighted from a train before it had come to a stand, and hurt her knee and hand - - - - - -	–	1	–	–	–	–	–	–
6 Oct. -	At Saxmundham a passenger attempted to enter a train as it was leaving the station, when he fell off the end of the platform, and one of his feet was run over and crushed - - - -	–	1	–	–	–	–	–	–

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Great Eastern—*cont.***								
10 Oct.	At Liverpool Street station a passenger alighted from a train before it had come to a stand, and fell upon the platform, injuring her arm - - -	–	1	–	–	–	–	–	–
11 Oct. -	At Waltham a passenger alighted from a train before it had come to a stand-still, and fell upon the platform, hurting her arm - - - -	–	1	–	–	–	–	–	–
12 Oct. -	At Bishopsgate station a passenger alighted from a train before it had come to a stand, and fell upon the platform, injuring her shoulder - -	–	1	–	–	–	–	–	–
15 Oct. -	* *Suicide.* At Colchester station, when the horseman was horsing a truck through the station, a young man who had been on the platform placed himself in front of the truck, and was run over and killed. The coroner's jury returned a verdict of "Suicide while in a state of insanity" - - -	–	–	–	–	1*	–	–	–
17 Oct. -	At Old Ford a passenger alighted from a train before it had come to a stand, and fell upon the platform, and was bruised - - - - -	–	1	–	–	–	–	–	–
17 Oct. -	At Silver Street station a passenger alighted from a train before it had come to a stand, and fell upon the platform, hurting her hand - - -	–	1	–	–	–	–	–	–
18 Oct. -	A carrier at Chelmsford station was descending the steps from the platform at the end of the goods-shed when a truck was being horsed into the shed, and the man was jammed between the truck and platform, breaking three of his ribs - -	–	–	–	–	–	–	–	1
21 Oct. -	At Rectory Road station a passenger alighted from a train before it had come to a stand, and fell upon the platform, cutting her head - - -	–	1	–	–	–	–	–	–
21 Oct. -	At Hackney Downs station a passenger alighted from a train before it had come to a stand, and fell upon the platform, grazing her face - - -	–	1	–	–	–	–	–	–
21 Oct. -	†At Stratford station, when the carriages of the up workmen's train were being placed at the platform, the men attempted to enter the train before it had stopped, and one man was pushed down and fell between the platform and the train, and had his back and head injured - - - -	–	1†	–	–	–	–	–	–
27 Oct. -	A man was found lying on the railway near Lea Bridge, so severely injured that he died before reaching the hospital - - - -	–	–	–	–	1	–	–	–
28 Oct. -	A gentleman, who was a lunatic, and was waiting with friends at Chelmsford station for the 5.20 p.m. up train, escaped from his keepers, and entered the 5.10 p.m. up train as it was leaving the station. He was afterwards found dead on the railway between Harold Wood and Romford stations, and was supposed to have jumped out of the train whilst it was in motion, and to have been run over by another train - - - -	1	–	–	–	–	–	–	–
30 Oct. -	At Hackney Downs station a passenger alighted from a train before it had come to a stand, and fell upon the platform, hurting her knee - - -	–	1	–	–	–	–	–	–
1 Nov. -	At Forest Gate station a passenger alighted from a train before it had come to a stand, and fell upon the platform, injuring her eye - - -	–	1	–	–	–	–	–	–
2 Nov. -	At Custom House station a passenger alighted from a train before it had come to a stand, and fell upon the platform, and cut his head - - -	–	1	–	–	–	–	–	–
5 Nov. -	At Old Ford station a passenger alighted from a train before it had come to a stand, and fell upon the platform, cutting his eye - - - -	–	1	–	–	–	–	–	–

† This accident was beyond the passenger's control.

ENGLAND AND WALES.

Accidents to Passengers from their own want of caution, &c.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Great Eastern**—*cont.*								
6 Nov. -	At Cambridge Heath station a passenger alighted from a train before it had come to a stand, and fell upon the platform, injuring her arm - -	–	1	–	–	–	–	–	–
7 Nov. -	At Cambridge Heath station a passenger alighted from a train before it had come to a stand, and fell upon the platform, and was bruised - -	–	1	–	–	–	–	–	–
8 Nov. -	At Burdett Road station a passenger alighted from a train before it had come to a stand, and fell upon the platform, hurting her knee - - -	–	1	–	–	–	–	–	–
11 Nov. -	At Bethnal Green station a passenger alighted from a train after it had started, and fell upon the platform, injuring his leg - - - -	–	1	–	–	–	–	–	–
11 Nov. -	At Bishopsgate a passenger, in hurriedly alighting from a train, caught one of his fingers in the carriage window and severely injured it - -	–	1	–	–	–	–	–	–
16 Nov. -	At Bishopsgate a passenger let a carriage window fall upon his fingers, which were bruised - -	–	1	–	–	–	–	–	–
17 Nov. -	At Cambridge a stable-lad, riding in a horse-box, got out of the box on to the down-line just in front of a down-train, and was knocked down, and had both legs run over - - - - - -	–	1	–	–	–	–	–	–
18 Nov. -	A man who was trespassing on the line near Cantley was run over and killed by a passenger-train -	–	–	–	–	1	–	–	–
29 Nov. -	At Cambridge Heath station a passenger alighted from a train before it had come to a stand, and fell upon the platform, cutting her arm - - -	–	1	–	–	–	–	–	–
4 Dec. -	At Hackney Downs station a passenger alighted from a train before it had come to a stand, and fell upon the platform, and was shaken - -	–	1	–	–	–	–	–	–
4 Dec. -	At Rectory Road station a passenger alighted from a train before it had come to a stand, and fell upon the platform, and was bruised - - -	–	1	–	–	–	–	–	–
11 Dec. -	At London Fields station a passenger alighted from a train after it had started to leave the station, and fell upon the platform, hurting his leg - - -	–	1	–	–	–	–	–	–
13 Dec. -	The dead body of a man was found on the line near an occupation level-crossing, about 800 yards from Enfield station - - - - -	–	–	–	–	1	–	–	–
15 Dec. -	A passenger alighted at Hackney Downs station from a train before it had come to a stand, and fell upon the platform, hurting her leg - -	–	1	–	–	–	–	–	–
15 Dec. -	At Loughton station a passenger alighted from the carriage next the front break, which was against the slope at the end of the down platform, and in doing so fell down and hurt her back - -	–	1	–	–	–	–	–	–
18 Dec. -	†A passenger, when alighting from a train at Stratford, caught his foot against a board forming part of the temporary platform used during the formation of a subway, and hurt his ankle - - - - -	–	1†	–	–	–	–	–	–
20 Dec. -	A passenger holding a ticket for Woodford entered a down Loughton carriage train at Stratford unperceived, and when the train was passing Buckhurst Hill he jumped out and fell upon the ballast, and had his head and face cut - - - -	–	1	–	–	–	–	–	–
21 Dec. -	A passenger alighted from a train at Clapton before it had come to a stand, and fell upon the platform, hurting his head - - - - -	–	1	–	–	–	–	–	–
22 Dec. -	* *Suicide.* At a level-crossing near Canning Town a man came upon the line and placed himself in front of a passenger-train, and was run over and killed -	–	–	–	–	1*	–	–	–
23 Dec. -	A passenger alighted from a train at Liverpool Street before it had come to a stand, and fell upon the platform, hurting his leg - - - -	–	1	–	–	–	–	–	–

† This accident was beyond the passenger's control.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Great Eastern—*cont.***								
26 Dec.	Two passengers alighted from a train at Canning Town as it was leaving the station, and fell upon the platform and were shaken	–	2	–	–	–	–	–	–
26 Dec.	A man trespassing on the railway between St. Ives and Huntingdon was knocked down by a train, and had his thigh severely injured	–	–	–	–	–	1	–	–
26 Dec.	At Dullingham station a soldier ran to re-enter a train in motion, when he fell down between the train and the platform, and was bruised and had his shoulder dislocated	–	1	–	–	–	–	–	–
28 Dec.	A passenger attempted to enter a train as it was leaving the station at Burdett Road, when he fell down upon the platform and hurt his arm	–	1	–	–	–	–	–	–
30 Dec.	A passenger alighted from a train as it was leaving Bishopsgate station, and fell upon the platform, and had her arm and hip hurt	–	1	–	–	–	–	–	–
	Total, Great Eastern	1	36	–	–	5	1	–	1
	Great Northern.								
1 Oct.	A passenger, who was alleged to have been under the influence of drink, opened the door of a carriage while the train was running near Dewsbury, fell on the line and was fatally injured	1	–	–	–	–	–	–	–
1 Oct.	At Doncaster station a man who had accompanied a friend to the station and was under the influence of drink, stood on the step of a horse-box while the train was in motion, and in attempting to alight, fell, and was dragged some distance alongside the train, and had his arm cut	–	–	–	–	–	–	–	1
15 Oct.	At Daybrook station a passenger had her fingers crushed in the hinge of a carriage-door, which was closed by a porter on the starting of the train	–	1	–	–	–	–	–	–
11 Nov.	At Mill Lane public level-crossing near Arlesey siding, a lad, after waiting for a down goods-train to pass, attempted to cross the line immediately behind it, and failing to notice the approach of an up express train, was knocked down by it and killed	–	–	1	–	–	–	–	–
19 Nov.	The mutilated body of a man was found on the line near Mill Lane crossing, near Arlesey siding, and it was believed that he was run over by a mail-train	–	–	–	–	1	–	–	–
13 Dec.	At Boston station a boy who was playing in the locomotive yard slipped and fell between some waggons and the coke stage. At the same moment the waggons were moved by an engine, and the boy's feet were crushed, rendering amputation necessary	–	–	–	–	–	1	–	–
14 Dec.	A man was run over by a passenger-train at Boston, and killed	–	–	–	–	1	–	–	–
18 Dec.	At Westgate street station a passenger attempting to enter a train while it was in motion, fell between the carriages and platform, and was slightly injured	–	1	–	–	–	–	–	–
22 Dec.	The dead body of a man with both legs cut off was found on the line near Westgate station	–	–	–	–	1	–	–	–
23 Dec.	The body of a man was found on the line at the public level-crossing near Boston station. It was supposed that deceased in attempting to cross the line was run over and killed by a passing train	–	–	1	–	–	–	–	–
	Total, Great Northern	1	2	2	–	3	1	–	1

ENGLAND AND WALES.

Accidents to Passengers from their own want of caution, &c.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Great Western.**								
23 Sept. -	A passenger, when alighting from a train at Whitland, fell and injured her arm - - -	–	1	–	–	–	–	–	–
3 Oct. -	A man who had trespassed on the line at Upwey, while in a state of intoxication, was knocked down by a London and South-Western train, and had his hand crushed - - - - -	–	–	–	–	–	1	–	–
3 Oct. -	On the arrival of a passenger-train at Plympton a passenger complained of having hurt his arm when entering a carriage at Plymouth - -	–	1	–	–	–	–	–	–
5 Oct. -	* *Suicide.* A man threw himself in front of a passenger train, near Cwmglyn, and was run over and killed - - - - - -	–	–	–	–	1*	–	–	–
7 Oct. -	A woman, while crossing the line at a foot-crossing near Bourne End, was run over by a passenger-train and killed - - - - -	–	–	1	–	–	–	–	–
7 Oct. -	A man, while trespassing on the line near Peplow, was run over by a passenger-train, and so seriously injured that he died shortly afterwards - -	–	–	–	–	1	–	–	–
11 Oct. -	A man, while trespassing on the line at Toullwyd, was knocked down by a mineral-train, and had his head cut - - - - -	–	–	–	–	–	1	–	–
12 Oct. -	A woman, while trespassing on the line near Chipping Norton, was run over by a passenger-train, and so seriously injured that she died the same day	–	–	–	–	1	–	–	–
12 Oct. -	A boy, while trespassing on the line at Bedminster, was run over by a goods-train, and his legs were crushed - - - - - -	–	–	–	–	–	1	–	–
13 Oct. -	A boy, while trespassing on the line at Handsworth, was run over by a goods-train and so seriously injured that he died shortly afterwards - -	–	–	–	–	1	–	–	–
18 Oct. -	A passenger in attempting to enter a train in motion at Birmingham fell between it and the platform and was killed - - - - -	1	–	–	–	–	–	–	–
18 Oct. -	The body of a woman was found on the line near Peterston. She was supposed to have been run over by the mail-train - - - -	–	–	–	–	1	–	–	–
19 Oct. -	A man, while trespassing on the line near Cardiff, was supposed to have been knocked down by a goods-train. He was so seriously injured that he subsequently died - - - - -	–	–	–	–	1	–	–	–
21 Oct. -	A woman, while trespassing on the line near Yarnton, was run over and killed by a train - -	–	–	–	–	1	–	–	–
23 Oct. -	A man, while trespassing on the line near Landore, was struck by an engine and had his back and toe injured - - - - - -	–	–	–	–	–	1	–	–
23 Oct. -	A passenger received an injury to one of her thumbs at Cardiff, in consequence of its being caught between the door and doorway of a carriage -	–	1	–	–	–	–	–	–
24 Oct. -	A passenger in attempting to alight from a train in motion at Hatton fell and injured his hand -	–	1	–	–	–	–	–	–
26 Oct. -	A passenger jumped from a train after it had left Tram Inn station and broke his leg - -	–	1	–	–	–	–	–	–
29 Oct. -	The body of a man was found on the line near West Bromwich - - - - -	–	–	–	–	1	–	–	–
30 Oct. -	A man, while trespassing on the line near Carn Brea, was run over and killed by a train - -	–	–	–	–	1	–	–	–
30 Oct. -	A passenger in attempting to alight from a train in motion at Hayes fell on the platform and injured her face - - - - - -	–	1	–	–	–	–	–	–
1 Nov. -	A lad, in attempting to get on a van in motion near Landore, fell under it, and was so severely injured that he died shortly afterwards - - -	–	–	–	–	1	–	–	–
3 Nov. -	A collier, while trespassing on the line at Aberdare, was run over and killed by a train - - -	–	–	–	–	1	–	–	–

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Great Western—*cont.***								
5 Nov. -	A passenger, after alighting from a train at Hanwell, fell and fractured his leg - - - - -	–	1	–	–	–	–	–	–
6 Nov. -	A man, while trespassing at Pontardulais in a state of intoxication, fell on to the line and was severely injured - - - - - - -	–	–	–	–	–	1	–	–
9 Nov. -	A passenger jumped out of a train before it had stopped at Raglan, and fell on the platform, injuring his face and back - - - - - - -	–	1	–	–	–	–	–	–
10 Nov. -	**Suicide.* A man committed suicide by placing his head on the rails in front of a train near Banbury -	–	–	–	–	1*	–	–	–
15 Nov. -	Two men, while walking on the line at Swindon, were knocked down by a train; one of them was killed, and the other had his knee injured - -	–	–	–	–	1	1	–	–
24 Nov. -	A passenger in alighting, at Oakengates, from a train which had come to a stand, fell and injured her back	–	1	–	–	–	–	–	–
24 Nov. -	A man on business at the station at Perranwell, when passing between two trucks, had his body squeezed between the buffers - - - - -	–	–	–	–	–	–	–	1
27 Nov. -	**Suicide.* Whilst a London and North-Western passenger-train was passing Abergavenny station, a man jumped from the platform in front of the engine and was run over and killed - -	–	–	–	–	1*	–	–	–
29 Nov. -	A passenger, in attempting to alight from a train in motion at Wolverhampton, fell on the platform and was shaken - - - - - -	–	1	–	–	–	–	–	–
4 Dec. -	A passenger fell, in alighting from a train which had been stopped by signals, outside Menheniot station, and was shaken - - - - - -	–	1	–	–	–	–	–	–
5 Dec. -	A passenger fell off the platform in front of a train at Great Bridge, and was run over and slightly injured - - - - - - -	–	1	–	–	–	–	–	–
6 Dec. -	A passenger in alighting from a train, which was stationary, at Cardiff, fell and complained of having injured her arm - - - - - - -	–	1	–	–	–	–	–	–
7 Dec. -	A man, supposed to have been run over by a train, was found on the line at Lye, so severely injured that he died the following day - - - -	–	–	–	–	1	–	–	–
8 Dec. -	A man on business at the terminus at Exeter was caught between the buffers of two waggons and squeezed - - - - - - -	–	–	–	–	–	–	–	1
10 Dec. -	A man, who was supposed to have been run over by a train, was found on the line near Resolven, and he subsequently died from the injuries he had received	–	–	–	–	1	–	–	–
12 Dec. -	A man, while crossing the line at an occupation-crossing near Draycott, was run over by a train and killed - - - - - - -	–	–	1	–	–	–	–	–
20 Dec. -	A passenger sprained his ankle in alighting from a carriage which had not been drawn up to the platform at Bradley and Moxley - - -	–	1	–	–	–	–	–	–
21 Dec. -	A trespasser, while crossing the line at Goring, was run over and killed by a train - - - -	–	–	–	–	1	–	–	–
23 Dec. -	A woman who had come to the station at Brettle Lane to see her daughter off by train, fell between it and the platform and was killed - -	–	–	–	–	–	–	1	–
23 Dec. -	A passenger, in attempting to alight from a train in motion at Oakengates, fell between it and the platform, and his leg was crushed - - -	–	1	–	–	–	–	–	–
24 Dec. -	A passenger fell under a train at Cheltenham, and was so seriously injured that he subsequently died -	1	–	–	–	–	–	–	–
26 Dec. -	A man, while trespassing on the line near Maidenhead, was run over by an engine and killed - -	–	–	–	–	1	–	–	–
26 Dec. -	A man who had come to the Bath station to see a friend off, in getting into a carriage, fell on the edge of the platform and fractured one of his ribs -	–	–	–	–	–	–	–	1

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Great Western—*cont.***								
26 Dec.	A passenger, while crossing from one platform to the other at Monmouth, was knocked down by an engine and shaken	–	1	–	–	–	–	–	–
30 Dec.	A child, while passing over a level-crossing near Droitwich, was run over and slightly injured by a train	–	–	–	1	–	–	–	–
30 Dec.	A man was run over and killed by a train at Shifnal	–	–	–	–	1	–	–	–
	Total, Great Western	2	16	2	1	19	6	1	3
	Great Western and Rhymney (Bargoed Joint).								
21 Nov.	A passenger jumped out of a train near Dowlais and was run over and killed	1	–	–	–	–	–	–	–
	Lancashire and Yorkshire.								
14 Oct.	A man, supposed to be a passenger, was found on the line near Westhoughton in an unconscious state, supposed to have fallen from a train. He subsequently died from the injuries he received	1	–	–	–	–	–	–	–
14 Oct.	A passenger was knocked down and slightly injured when attempting to join a train in motion at Middleton junction. She was reported to have been in liquor at the time	–	1	–	–	–	–	–	–
17 Oct.	A man, waiting the arrival of a passenger-train at Newburgh, was crossing the line, when he was run over by a train and killed. He was reported to be deaf and 70 years old	–	–	–	–	–	–	1	–
18 Oct.	A boy, ten years of age, was crushed to death between the large gate and post at the level-crossing at Marsh Lane station. The boy was attempting to get between the gate and post (instead of going through the wicket-gate) when the pointsman was in the act of closing the gate	–	–	1	–	–	–	–	–
26 Oct.	A man, when crossing the line at a public level-crossing at Ramsbottom, was knocked down by the life-guard of an engine and slightly shaken	–	–	–	1	–	–	–	–
27 Oct.	A child was knocked down by a passenger train, when crossing the line at the high-level public crossing near Rainford junction, and was so severely injured that he subsequently died	–	–	1	–	–	–	–	–
28 Oct.	†A passenger, in alighting from a carriage at North Dean, fell, and cut her face. The carriage had been taken about seven yards beyond the platform	–	1†	–	–	–	–	–	–
30 Oct.	A man jumped from a passenger-train between Helmshore and Ramsbottom and was killed. He was reported to have been fighting in a third-class carriage, and left the train as above stated	1	–	–	–	–	–	–	–
30 Oct.	A passenger opened the door of a second-class carriage when near Lowmoor station, and fell from the carriage on to the line and was slightly shaken. He was said to have been in liquor at the time	–	1	–	–	–	–	–	–

† This accident was beyond the passenger's control.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Lancashire and Yorkshire—*cont.***								
4 Nov. -	A passenger, whilst leaving a train in motion at Blackburn, fell on the platform, and had his face cut, and was shaken - - - - -	–	1	–	–	–	–	–	–
6 Nov. -	A passenger, when alighting from a train in motion at Wakefield, fell upon the platform, and was dragged a few yards, and was shaken. Her dress had become entangled with some part of the carriage -	–	1	–	–	–	–	–	–
11 Nov. -	A trespasser was found dead upon the line near Newton Heath; he is supposed to have been knocked down by an engine, when walking home from town	–	–	–	–	1	–	–	–
14 Nov. -	A man was run over and killed by a goods-train at Stock Hall near Hebden Bridge. He was supposed to have been lying on the line, about seven yards from Stock Hall crossing, in a helpless state of intoxication - - - - - -	–	–	–	–	1	–	–	–
16 Nov. -	A passenger was found on the line near the block-cabin at Westhoughton with her face cut. She was supposed to have got out or fallen out of a train which had come to a stand at the above cabin	–	1	–	–	–	–	–	–
17 Nov. -	A trespasser fell between the carriages of a train when stepping upon the couplings to pass from one platform to another, at Liverpool, and had his ear cut and jaw injured - - - - -	–	–	–	–	–	1	–	–
18 Nov. -	A trespasser was knocked down and run over by a train at Newton Heath, and had his arm cut off -	–	–	–	–	–	1	–	–
20 Nov. -	A passenger jumped from a train, when he found he was carried beyond his destination, at Werneth, and killed. He was sleeping when the train stopped at the station at which he ought to have alighted -	1	–	–	–	–	–	–	–
23 Nov. -	After a train had left the station at Sandhills a passenger who found he was being overcarried, jumped out of the train, and had his head cut -	–	1	–	–	–	–	–	–
4 Dec. -	A man was knocked down and killed by the engine of a passenger-train at Padiham as he was trespassing on the line - - - - - -	–	–	–	–	1	–	–	–
12 Dec. -	A passenger opened the door of a carriage at Bamber Bridge for the purpose of leaving a train in motion, and rolled down the railway slope, and was shaken -	–	1	–	–	–	–	–	–
14 Dec. -	A passenger when leaving a train in motion at Crosby, near Liverpool, was thrown on to the platform, and had her head cut - - - - - -	–	1	–	–	–	–	–	–
14 Dec. -	A boy left in charge of a refreshment-stall attempted to join a train in motion at Rochdale, when he was dragged along the platform for some distance, and was cut and bruised - - - - -	–	–	–	–	–	–	–	1
16 Dec. -	* *Suicide.* A man placed himself in the way of a train at Tanshelf, and his legs were so severely injured, that he subsequently died - - -	–	–	–	–	1*	–	–	–
17 Dec. -	A trespasser was knocked down by a train and run over, having two fingers cut off, when passing through Walton tunnel, under the influence of liquor - - - - - - -	–	–	–	–	–	1	–	–
18 Dec. -	A passenger, when attempting to join a train in motion at Brighouse, slipped, and fell between the platform and carriage, and was seriously injured -	–	1	–	–	–	–	–	–
25 Dec. -	A passenger had his fingers crushed when closing the door of a carriage at Littleborough, near Rochdale -	–	1	–	–	–	–	–	–
26 Dec. -	A man was knocked down by a London and North-Western passenger-train at Mirfield, and had his head cut and several ribs broken - - -	–	–	–	–	–	–	–	1
26 Dec. -	A trespasser when passing from one side of Victoria station, Manchester, to the other, as a train was being formed, was struck by one of the carriages, and had his arm injured - - - - -	–	–	–	–	–	1	–	–

ENGLAND AND WALES.

Accidents to Passengers from their own want of caution, &c.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Lancashire and Yorkshire—*cont.***								
30 Dec. -	A passenger, in joining a train at Castleford, slipped from the footstep of the carriage and had her shin-bone bruised - - - - - -	–	1	–	–	–	–	–	–
	Total, Lancashire and Yorkshire -	3	12	2	1	4	4	1	2
	London and North-Western.								
2 Oct. -	A trespasser, whilst walking on the line near Howich (Cromford and High Peak Railway), was run over by some waggons descending the incline, and killed	–	–	–	–	1	–	–	–
2 Oct. -	Whilst a passenger-train was drawing up to the platform at Llanerchymedd it ran over and killed a passenger - - - - - - -	1	–	–	–	–	–	–	–
3 Oct. -	As a boy, in the employ of Messrs. Smith & Son, was crossing the rails at Willesden Junction, he was knocked down by a train, and had his face badly cut	–	–	–	–	–	–	–	1
4 Oct. -	A man, whilst crossing the line at Blaby public level-crossing, was knocked down and killed by a goods-train - - - - - - - -	–	–	1	–	–	–	–	–
14 Oct. -	A passenger, whilst crossing the line at the end of the platform at Bangor station, was knocked down by a passing goods-train and fatally injured -	1	–	–	–	–	–	–	–
18 Oct. -	A passenger, whilst attempting to enter a train in motion at Berkswell, fell beneath the carriages, and had his arm crushed - - - - -	–	1	–	–	–	–	–	–
18 Oct. -	A passenger, whilst alighting from a train at Kilburn station, slipped while holding the carriage-door, and had his shoulder dislocated - - - -	–	1	–	–	–	–	–	–
19 Oct. -	A trespasser, whilst endeavouring to cross the line at Brynmawr, was knocked down by a passing passenger-train, and run over, having his foot cut off -	–	–	–	–	–	1	–	–
20 Oct. -	A man, whilst endeavouring to pick up a piece of paper on the line at Kensal Green station, was run over by a train, and killed - - - -	–	–	–	–	1	–	–	–
21 Oct. -	As a woman was crossing at Llandudno Junction level-crossing, the gate-man opened one of the gates across the road, and caught her foot, slightly injuring it - - - - - - -	–	–	–	1	–	–	–	–
23 Oct. -	A man, whilst crossing the line at Handforth, was knocked down and killed by a passing passenger-train - - - - - - - -	–	–	–	–	1	–	–	–
26 Oct. -	A passenger, whilst alighting from a carriage before the train had stopped at Walsall, fell on to the platform, and was badly shaken - - -	–	1	–	–	–	–	–	–
27 Oct. -	A passenger, whilst alighting from a train in motion at Burton and Holme, was run over, and killed -	1	–	–	–	–	–	–	–
28 Oct. -	A trespasser, whilst walking on the line near Yelvertoft, was knocked down by a passenger-train, and killed - - - - - - - -	–	–	–	–	1	–	–	–
29 Oct. -	†A passenger, whilst walking on the line at Holyhead, was knocked down by a goods-train which was shunting, and killed. It was stated that he was in the care of a servant of the company when the accident occurred - - - - - -	1†	–	–	–	–	–	–	–
5 Nov. -	A passenger, whilst endeavouring to enter a train which was in motion, at London Road station, Manchester, fell on to the platform, and injured his elbow - - - - - - -	–	1	–	–	–	–	–	–
6 Nov. -	Whilst a passenger was alighting from a carriage before the train had stopped at Gravelly Hill, she was thrown on to the platform and had her leg and hand slightly injured - - - - - -	–	1	–	–	–	–	–	–

† This accident was beyond the passenger's control, but the company returned it as resulting from his own want of caution, as the servant referred to denied that he had charge of the deceased.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**London and North-Western**—*cont.*								
8 Nov. -	A trespasser, whilst walking on the line between Market Harboro' and Bowden Junction, was knocked down by a Midland Company's mineral-train, and killed - - - - - -	–	–	–	–	1	–	–	–
8 Nov. -	A passenger was found on the line at Whitmore fatally injured, having alighted from a train which was not timed to stop at that place - -	1	–	–	–	–	–	–	–
9 Nov. -	A trespasser, whilst walking homeward on the line between Tetley siding and Golborne, was knocked down by a passenger-train, and killed - -	–	–	–	–	1	–	–	–
9 Nov. -	A passenger, whilst endeavouring to enter a train in motion at New Street station, Birmingham, missed his footing and fell between the carriages and the platform, and was run over and killed -	1	–	–	–	–	–	–	–
11 Nov. -	Whilst a trespasser was crossing the line at Chelford he was knocked down and killed by a passing passenger-train - - - - - -	–	–	–	–	1	–	–	–
11 Nov. -	A passenger, whilst alighting from a train which was in motion at Patricroft, fell between the carriages and platform and was shaken - - -	–	1	–	–	–	–	–	–
13 Nov. -	A drover, whilst endeavouring to enter the break-van of a special cattle-train which was in motion at Warrington, slipped and fell between the platform and step of the break-van, and was killed - -	1	–	–	–	–	–	–	–
14 Nov. -	A passenger, whilst alighting from a train before it had stopped at Hampstead Heath, fell between the carriage and platform, and fractured his leg -	–	1	–	–	–	–	–	–
17 Nov. -	A farm labourer was found dead on the line near the platform at Farnworth, having been apparently knocked down by a passing train - - -	–	–	–	–	–	–	1	–
20 Nov. -	A passenger, whilst jumping out of a carriage at Stockport, fell on to the platform, and had his leg slightly injured - - - - - -	–	1	–	–	–	–	–	–
21 Nov. -	†A passenger at the Milverton station, Leamington, attempted to get into a carriage before the train had come to a standstill, when he was pushed off the platform by some other passengers, and had one of his legs broken - - - - - -	–	1†	–	–	–	–	–	–
21 Nov. -	A passenger, whilst endeavouring to alight from a train in motion at Huddersfield, fell on to the platform, and slightly injured her side - -	–	1	–	–	–	–	–	–
21 Nov. -	A passenger, whilst endeavouring to alight from a train before it had stopped at Staley Bridge, fell between the platform and carriages, and had his head and leg slightly injured - - - - -	–	1	–	–	–	–	–	–
5 Dec. -	A passenger, after alighting from a carriage at Hindley Green station, fell from the platform under the train, and was run over and killed - -	1	–	–	–	–	–	–	–
7 Dec. -	A horse-driver, in private employ, whilst hauling a waggon of coal at Birkenhead station, was caught between two trucks, and killed - - -	–	–	–	–	–	–	1	–
9 Dec. -	Whilst in custody of the police, and as the train was travelling between Spread Eagle and Penkridge, a passenger opened the carriage door and jumped out, being slightly injured - - - -	–	1	–	–	–	–	–	–
11 Dec. -	A passenger, whilst standing on the platform at Hampstead Heath, was knocked down by the open door of an incoming train, and was dragged some distance between the platform and carriage -	–	1	–	–	–	–	–	–
12 Dec. -	Whilst a man was walking on the line near Oxford he was knocked down and killed by a passing passenger-train - - - - - -	–	–	–	–	1	–	–	–
13 Dec. -	A man, whilst trespassing on the line near Oxenholme, was knocked down by a passenger-train, and so severely injured that he subsequently died -	–	–	–	–	1	–	–	–

† This accident was beyond the passenger's control.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**London and North-Western—*cont.***								
13 Dec.	A passenger, whilst standing near the edge of the platform at Bletchley, was knocked down by the engine of an incoming passenger-train, and shaken	–	1	–	–	–	–	–	–
14 Dec.	A trespasser, whilst standing on the line near Rugeley, was knocked down by a train, and killed	–	–	–	–	1	–	–	–
16 Dec.	A passenger, whilst alighting from a North London train in motion at Kentish Town, fell on the platform, and was shaken	–	1	–	–	–	–	–	–
19 Dec.	A passenger, whilst alighting from a train before it had stopped at Sudbury, fell on to the platform, cutting his forehead	–	1	–	–	–	–	–	–
20 Dec.	†Whilst travelling near Stockport a portion of the roof-lamp fell from the carriage on to a passenger's foot, cutting it	–	1†	–	–	–	–	–	–
22 Dec.	A passenger, whilst alighting from a train in motion at Walsall station, fell between the platform and carriages, and had his leg run over. He subsequently died from the injuries he received	1	–	–	–	–	–	–	–
25 Dec.	A passenger, whilst alighting from a train before it had stopped at Patricroft, fell to the ground, and had the splint bone of his leg broken	–	1	–	–	–	–	–	–
27 Dec.	A passenger, whilst alighting from a train at Warrington, slipped and fell between the platform and carriage, and was slightly injured	–	1	–	–	–	–	–	–
29 Dec.	† Whilst a passenger was sitting in the train at London Road station, Manchester, a lamp fell through the opening in the roof of the carriage on to her knee, slightly injuring it	–	†1	–	–	–	–	–	–
30 Dec.	A man, whilst crossing the line at Lichfield station, was knocked down by a passenger-train, and badly injured	–	–	–	–	–	–	–	1
	Total, London and North-Western	9	20	1	1	10	1	2	2
	London and North-Western and Great Western Joint.								
23 Oct.	A passenger, in alighting from a train in motion at Addison Road fell on the platform, and complained of having injured her leg	–	1	–	–	–	–	–	–
18 Nov.	†A passenger, in alighting from a train which had overshot the platform at Dinmore, fell, and injured himself internally	–	1†	–	–	–	–	–	–
14 Dec.	A passenger, in alighting from a coach which had not drawn up to the platform at Hanwood, fell, and was shaken	–	1	–	–	–	–	–	–
	Total, London and North-Western and Great Western Joint	–	3	–	–	–	–	–	–
	London and South-Western.								
3 Oct.	**Suicide.* A man was found dead on the line near Guildford. The coroner's jury returned a verdict of "Suicide while under temporary insanity"	–	–	–	–	1*	–	–	–
6 Oct.	A trespasser was found dead on the line near Wimborne station. He missed the train by which he intended to travel, and appears to have walked on the line to reach his home	–	–	–	–	1	–	–	–
9 Oct.	A labourer employed at the cement works at Coaxden siding was knocked down and killed whilst endeavouring to couple a waggon on to a goods-train in the siding at Coaxden, near Axminster	–	–	–	–	–	–	1	–
18 Oct.	**Suicide.* A man was found dead on the line near Norbiton. The coroner's jury returned a verdict of "Killed on the railway by his own act, whilst of unsound mind"	–	–	–	–	1*	–	–	–

† These accidents were beyond the passengers' control.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**London and South-Western—*cont.***								
1 Nov. -	A trespasser was knocked down and killed by an engine while improperly attempting to cross the line at Northam station - - - -	–	–	–	–	1	–	–	–
13 Nov. -	A man was knocked down by a train while improperly walking on the line from the goods-yard to the platform at Surbiton station, and had one of his arms nearly cut off - - - -	–	–	–	–	–	1	–	–
14 Nov. -	A passenger, in alighting from a carriage at the Woking station after the train had stopped, fell on to the platform, and broke one of her legs - -	–	1	–	–	–	–	–	–
23 Dec. -	A man was knocked down by an engine while attempting to cross the line at Weybridge station, and had his head cut - - - - -	–	–	–	–	–	–	–	1
	Total, London and South-Western -	–	1	–	–	4	1	1	1
	London, Brighton, and South Coast.								
2 Oct. -	A passenger, in alighting from a first-class carriage at London Bridge, fell, and broke her leg - -	–	1	–	–	–	–	–	–
22 Nov. -	A passenger alighted from a train before it had stopped at Forest Hill, and received such severe injuries that he subsequently died - - -	1	–	–	–	–	–	–	–
4 Dec. -	A passenger, while walking over the crossing at Redhill station, was run over by an express train and killed - - - - - -	1	–	–	–	–	–	–	–
8 Dec. -	* *Suicide.* A woman threw herself in front of a train at Horsham, and was run over and killed - -	–	–	–	–	*1	–	–	–
27 Dec. -	A man was knocked down while walking on the line near the public footway at Three Bridges by a train from Brighton, and had his head cut severely	–	–	–	–	–	1	–	–
	Total, London, Brighton, and South Coast -	2	1	–	–	1	1	–	–
	London, Chatham, and Dover.								
23 Oct. -	* *Suicide.* As a train was approaching Malling, a man laid down with his head on the line, and was killed by the train. The coroner's jury returned a verdict, "Caused his own death while in a state of unsound mind" - - - - - -	–	–	–	–	*1	–	–	–
7 Nov. -	A man was in the act of carrying some slates across the line at Clapham when the engine of a train caught him, knocking him down between the metals, and he was severely injured - -	–	–	–	–	–	–	–	1
17 Nov. -	A passenger left a train in motion at Victoria station, and was thrown down, and had her arm broken -	–	1	–	–	–	–	–	–
	Total, London, Chatham, and Dover -	–	1	–	–	1	–	–	1
	Manchester, Sheffield, and Lincolnshire.								
12 Oct. -	A passenger alighted from a train before it had come to a stand at Frodingham station, and fell upon the platform, sustaining some slight injury to her arm and shoulder - - - - -	–	1	–	–	–	–	–	–
17 Oct. -	A man was found upon the line at Tinsley with his arm injured. He stated that he was standing upon the platform intending to join a train to Sheffield, when the light from the engine as it was passing turned him giddy, and he fell upon the line -	–	1	–	–	–	–	–	–

ENGLAND AND WALES.

Accidents to Passengers from their own want of caution, &c.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Manchester, Sheffield, and Lincolnshire—*cont.***								
18 Oct. -	An old woman when going over the railway at the Garden Street Junction public level-crossing, Grimsby, was knocked down and slightly injured by a Great Northern light engine, which she had not observed approaching - - - -	–	–	–	1	–	–	–	–
21 Oct. -	A passenger, in attempting to alight from a train at Gorton station before it had come to a stand, missed her footing, and fell between the platform carriages, and was slightly injured - -	–	1	–	–	–	–	–	–
30 Oct. -	Whilst a waggon of stone was being discharged at Worksop a carter sat upon one of the buffers of the waggon, and had his thigh slightly injured by being crushed between two buffers, another waggon having been shunted into the siding - -	–	–	–	–	–	–	–	1
4 Nov. -	†A passenger, when alighting from a train at Wombwell, fell, and was slightly injured - - -	–	1†	–	–	–	–	–	–
14 Nov. -	A passenger, when alighting from a train at Hadfield, missed her footing, and fell, being slightly injured	–	1	–	–	–	–	–	–
18 Nov. -	A passenger who had alighted from a train at Dinting, and was walking along the platform, fell on to the line, and was slightly injured by the carriages, the train having just been started - - -	–	1	–	–	–	–	–	–
26 Nov. -	The body of a man who had been run over by a train was found upon the line near to Kiveton Park -	–	–	–	–	1	–	–	–
29 Nov. -	A woman who had gone to the Fairfield station to see a young man off by train, attempted to cross the line on the level instead of making use of the footbridge, and was knocked down and instantly killed by a train - - - - -	–	–	–	–	1	–	–	–
	Total, Manchester, Sheffield, and Lincolnshire	–	6	–	1	2	–	–	1
	Manchester South Junction and Altrincham.								
25 Dec. -	A passenger in alighting from a train before it had come to a stand at London Road station, Manchester, had his leg broken. He was under the influence of drink at the time - - -	–	1	–	–	–	–	–	–
	Metropolitan.								
30 Oct. -	A passenger, in attempting to alight from a train at Aldersgate Street before it had stopped, fell on to the platform, and was so seriously injured that she afterwards died - - - - -	1	–	–	–	–	–	–	–
2 Dec. -	As a train was entering Portland Road station a man either fell or threw himself upon the ballast in front of the engine, which passed over and killed him - - - - - -	1	–	–	–	–	–	–	–
16 Dec. -	†A passenger, in trying to enter a train at Aldersgate station after it had started, fell between the carriage and the platform on to the ballast, and was killed. The coroner's jury found that the accident occurred through insufficient time being allowed passengers to enter the train - - -	1†	–	–	–	–	–	–	–
21 Dec. -	A passenger, in trying to re-enter a train at Edgware Road station after it had started, reeled and fell against a carriage, and got his leg between the carriage step and the platform, and was killed -	1	–	–	–	–	–	–	–
	Total, Metropolitan - -	4	–	–	–	–	–	–	–

† These accidents were beyond the passengers' control.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Metropolitan and Metropolitan District Joint.**								
25 Nov. -	A passenger, in attempting to enter a train at Kensington (High Street) station after it had started, slipped and fell between the carriage and platform on to the ballast, the train passing over his right leg, cutting it off - - -	–	1	–	–	–	–	–	–
	Metropolitan District.								
1 Dec. -	* *Suicide.* A man threw himself in front of a down Metropolitan passenger-train as it was entering the Victoria station, and was so seriously injured that he afterwards died - - - - -	–	–	–	–	1*	–	–	–
23 Dec. -	As a passenger-train was entering Temple station a passenger, standing on the permanent-way, was knocked down by the train, and so seriously injured that he died shortly afterwards - -	1	–	–	–	–	–	–	–
	Total, Metropolitan District - -	1	–	–	–	1	–	–	–
	Midland.								
2 Oct. -	A youth, whilst trespassing on the line near Gwys station, was knocked down by a waggon and fatally injured - - - - - -	–	–	–	–	1	–	–	–
9 Oct. -	A man, whilst crossing the line at the Basford level-crossing, was knocked down by a passing train sustaining fatal injuries - - - - -	–	–	1	–	–	–	–	–
9 Oct. -	A passenger, in attempting to alight from a train whilst it was in motion at Kentish Town, slipped down upon the platform, slightly injuring herself -	–	1	–	–	–	–	–	–
11 Oct. -	Two young men jumped off a special train from Leicester to Hitchin (for which they had no tickets) as it was passing through Henlow, a station the train was not booked to stop at, and were shortly afterwards found in the "six feet" severely injured - - - - - -	–	–	–	–	–	2	–	–
14 Oct. -	A passenger, in alighting from a train whilst it was in motion at Haverstock Hill, slipped and fell upon the platform, slightly hurting her ankle -	–	1	–	–	–	–	–	–
16 Oct. -	A man, whilst crossing the line at Mansfield level-crossing, was knocked down by the engine of a passing train and had one of his arms run over -	–	–	–	1	–	–	–	–
17 Oct. -	As a man was loading a waggon at Woodville it had to be pushed clear of the crossing, and whilst this was being done he fell out on to the line, and the wheels passed over one of his legs - -	–	–	–	–	–	–	–	1
19 Oct. -	A man who was carting coal from the Kettering station attempted to cross the goods-sidings whilst shunting was going on, and was caught between the buffers of two waggons and slightly crushed -	–	–	–	–	–	–	–	1
19 Oct. -	A passenger, in alighting from a train whilst it was in motion at Tamworth, slipped between the carriages and platform, and somewhat hurt one of his legs - - - - - -	–	1	–	–	–	–	–	–
21 Oct. -	* *Suicide.* A man committed suicide at St. Albans by placing his neck on the rails and allowing it to be run over by a train. The coroner's jury returned a verdict of "Committed suicide whilst in an unsound state of mind" - - -	–	–	–	–	1*	–	–	–

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Midland**—*cont.*								
27 Oct.	A passenger, in attempting to alight from a train whilst it was in motion at Wath (the train having slightly over-run the platform), slipped and fell to the ground, sustaining a severe shaking	–	1	–	–	–	–	–	–
8 Nov.	* *Suicide.* A man was found dead on the line near Upper Holloway. The coroner's jury returned the verdict, "Committed suicide whilst in an unsound state of mind"	–	–	–	–	1*	–	–	–
13 Nov.	An intending passenger, whilst crossing the line at Berkeley Road station, was caught by an engine and dragged some distance between it and the platform, sustaining some severe bruises	–	1	–	–	–	–	–	–
20 Nov.	A passenger, in alighting from a train in motion at Wickwar, fell between the platform and carriages, and was so seriously injured that he afterwards died	1	–	–	–	–	–	–	–
22 Nov.	A passenger, in attempting to enter a train in motion at Nottingham, was knocked down on to the platform, sustaining a slight shaking	–	1	–	–	–	–	–	–
23 Nov.	A passenger, in attempting to alight from a train in motion at Bulwell, slipped between the platform and carriages, having one of his feet run over	–	1	–	–	–	–	–	–
26 Nov.	A passenger, in alighting from a train in motion at Finchley Road, fell down upon the platform, sustaining a severe shaking	–	1	–	–	–	–	–	–
28 Nov.	A labourer, whilst unhooking a waggon at Gurnos, fell over the end on to the rails, and one of the wheels passed over his leg	–	–	–	–	–	–	–	1
29 Nov.	An intending passenger was crossing the line at Heath Town, when he was knocked down by a train, sustaining a severe shaking	–	1	–	–	–	–	–	–
29 Nov.	A man was found dead on the line near Codnor Park, having been run over by a passing train, whilst trespassing	–	–	–	–	1	–	–	–
2 Dec.	As a passenger was alighting from a train in motion at Appleby he fell upon the platform, slightly cutting his face	–	1	–	–	–	–	–	–
2 Dec.	As a passenger was alighting from a train in motion at Ampthill he slipped and fell to the platform, sustaining a severe shaking	–	1	–	–	–	–	–	–
9 Dec.	As a passenger was crossing the line at Stretton station she was knocked down by a train, and killed on the spot	1	–	–	–	–	–	–	–
11 Dec.	A passenger got on to the line at Kettering station, for the purpose, it was supposed, of picking up her ticket, and was knocked down by a goods-train and slightly injured	–	1	–	–	–	–	–	–
16 Dec.	A passenger, in attempting to get out of a train on the wrong side at Wincobank, fell on to the ballast, sustaining a severe shaking	–	1	–	–	–	–	–	–
20 Dec.	A man, whilst walking upon the line at Chapel-en-le-Frith, was struck by the buffer of an engine and knocked down, being somewhat shaken	–	–	–	–	–	–	–	1
30 Dec.	A trespasser, whilst walking upon the line at South Tottenham was knocked down by a Great Eastern Company's engine, sustaining severe injuries	–	–	–	–	–	1	–	–
	Total, Midland	2	13	1	1	4	3	–	4

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Monmouthshire.**								
4 Nov. -	A woman, whilst trespassing on the sidings by the canal-side at Newport, picking coal, was knocked down by a pilot-train, and killed - - -	–	–	–	–	1	–	–	–
7 Nov. -	A man, when attempting to cross the line near Pen-y-bont level-crossing, was knocked down by an engine, and killed - - - - -	–	–	–	–	1	–	–	–
22 Dec. -	A woman, 70 years old, when crossing the line, by way of a public level-crossing, at Newport, was knocked down by a train, and seriously injured -	–	–	–	1	–	–	–	–
27 Dec. -	Two men, when trespassing on the line between Blaenavon and Cwmavon, were knocked down by a passenger-train; one was killed on the spot, and the other died four hours afterwards - -	–	–	–	–	2	–	–	–
	Total, Monmouthshire - -	–	–	–	1	4	–	–	–
	North and South Western Junction.								
5 Dec. -	A passenger, when attempting to alight from a North London Company's passenger train in motion at Acton station, fell, and had her head cut, and was bruised - - - - -	–	1	–	–	–	–	–	–
	North-Eastern.								
1 Oct. -	A passenger attempted to alight from a train at Hull station before it had come to a stand, and in doing so fell between the carriages and the platform, and injured her arm and leg - - - -	–	1	–	–	–	–	–	–
4 Oct. -	A carter in the employ of a private firm was shovelling coal from one of the cells at the coal depôts at York, when some waggons were shunted with too much force on to the cell in which he was engaged, and a quantity of coal fell from one of the waggons upon him, and injured his head - - -	–	–	–	–	–	–	–	1
10 Oct. -	A passenger attempted to alight from a train at Heads Nook station before it had come to a stand, and fell between the carriages and platform, and injured his side - - - - - - -	–	1	–	–	–	–	–	–
10 Oct. -	A man employed at the Newport Ironworks was knocked down by an engine which was bringing some waggons out of the Ironworks siding, and so seriously injured that he died shortly afterwards -	–	–	–	–	–	–	1	–
10 Oct. -	A man attempted to jump on to a mineral-train in motion near Shincliffe, and in doing so fell, and was somewhat injured - - - - -	–	–	–	–	–	1	–	–
11 Oct. -	A passenger attempted to cross the line from the up to the down platform at Burton Salmon, and in doing so was knocked down by an engine, and received some injury to her head - - -	–	1	–	–	–	–	–	–
14 Oct. -	A passenger attempted to cross the line from one platform to the other at Ferryhill station, and in doing so was knocked down by the engine of a market-train from Darlington, and sustained such injuries that she died shortly afterwards - - -	1	–	–	–	–	–	–	–
16 Oct. -	A man attempted to cross the line at Heaton and was struck by the engine of a passenger-train, and had his head injured - - - - -	–	–	–	–	–	1	–	–

ENGLAND AND WALES.

Accidents to Passengers from their own want of caution, &c.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**North-Eastern**—*cont.*								
16 Oct. -	A passenger attempted to alight from a train as it was leaving Howdon station, and fell, injuring his head - - - - - -	–	1	–	–	–	–	–	–
16 Oct. -	Whilst a youth was trespassing on the line near Hunwick, he was knocked down by a passenger-train, and seriously injured - - - -	–	–	–	–	–	1	–	–
21 Oct. -	On the arrival of a train at Holtby it over-ran the platform, and as the train was being set back a passenger attempted to alight, and in doing so fell between the vehicles and the platform, and was so seriously injured that he died before he could be extricated. The passengers were warned not to alight until the train had come to a stand at the platform	1	–	–	–	–	–	–	–
22 Oct. -	As a passenger-train was leaving the station at Norham a man jumped from a third-class carriage, and dragged an elderly woman with him, and both fell between the platform and the vehicles, and were slightly bruised - - - - -	–	2	–	–	–	–	–	–
23 Oct. -	A passenger attempted to alight from a train at the Central station, Newcastle, before it had come to a stand, and fell between the vehicles and the platform, and was shaken - - - -	–	1	–	–	–	–	–	–
25 Oct. -	A youth fell from a waggon upon which he was riding between the Quay side and the Trafalgar station, Newcastle, and was run over and killed on the spot - - - - - -	–	–	–	–	1	–	–	–
28 Oct. -	A youth fell out of a train near Hartlepool, and was slightly injured. The door of the compartment was said to have been properly secured before the train left West Hartlepool - - -	–	1	–	–	–	–	–	–
29 Oct. -	A passenger attempted to alight from a train in motion at Haydon Bridge station, and fell between the carriages and the platform, injuring his back and knee	–	1	–	–	–	–	–	–
29 Oct. -	A passenger sprained her ankle in alighting from a train at West Hartlepool - - - -	–	1	–	–	–	–	–	–
2 Nov. -	A man fell from a waggon of a mineral-train upon which he was riding near Lackenby, and was run over, sustaining injuries from which he shortly afterwards died - - - - -	–	–	–	–	1	–	–	–
3 Nov. -	A youth attempted to jump on to the van of a mineral-train whilst in motion near Washington, and in doing so fell, and injured his knee - -	–	–	–	–	–	1	–	–
5 Nov. -	A passenger attempted to alight from a train at Hull before it had come to a stand, and in doing so fell between the carriages and the platform, and injured her leg	–	1	–	–	–	–	–	–
7 Nov. -	A passenger attempted to alight from a train at Gosforth station before it had come to a stand, and fell, and broke his leg - - - - -	–	1	–	–	–	–	–	–
8 Nov. -	A girl was knocked down and killed by a train whilst attempting to cross the line at Hett Mill public level-crossing near Croxdale - - -	–	–	1	–	–	–	–	–
9 Nov. -	A man was lying upon the line at West Hartlepool, under the influence of drink, when he was run over by an engine, and slightly injured - -	–	–	–	–	–	1	–	–
10 Nov. -	A man was found lying dead upon the line, near Cramlington, having apparently been run over by an engine, whilst trespassing upon the railway -	–	–	–	–	1	–	–	–
10 Nov. -	A passenger attempted to alight from a train at Hedon station before it had come to a stand, and fell, and injured her head - - - - -	–	1	–	–	–	–	–	–
11 Nov. -	A trespasser attempted to pass between two coal-waggons in the Humber Dock sidings at Hull, and was slightly crushed between the buffers - -	–	–	–	–	–	1	–	–
15 Nov. -	A youth had one of his feet run over when trespassing on the line near Bedlington - - -	–	–	–	–	–	1	–	–

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**North-Eastern**—*cont.*								
17 Nov. -	Whilst a man was trespassing upon the line near Croft Junction, Darlington, he was knocked down by a mineral-train, and so seriously injured that he died shortly afterwards - - - -	–	–	–	–	1	–	–	–
18 Nov. -	A passenger fell, in alighting from a train at Felling station, and injured her ankle - - -	–	1	–	–	–	–	–	–
18 Nov. -	A passenger attempted to cross from the down to the up platform at Sleights in front of a train, and was knocked down and slightly injured - -	–	1	–	–	–	–	–	–
21 Nov. -	A man was knocked down and killed on the spot by an engine whilst attempting to cross the line at a public level-crossing at Londesboro' station - -	–	–	1	–	–	–	–	–
21 Nov. -	Whilst a man was trespassing on the line near Evenwood he was knocked down by a mineral-train and killed - - - - - - -	–	–	–	–	1	–	–	–
22 Nov. -	Whilst a man was trespassing upon the line in the goods-yard at Hartlepool he was knocked down and killed on the spot by some trucks which were being shunted - - - - - -	–	–	–	–	1	–	–	–
23 Nov. -	Whilst a woman was attempting to cross the line at a private level-crossing near Crook she was knocked down and killed on the spot by a passenger-train -	–	–	1	–	–	–	–	–
25 Nov. -	Whilst a youth was trespassing in the sidings at West Hartlepool he was run over and killed by some waggons which were being shunted - -	–	–	–	–	1	–	–	–
6 Dec. -	A passenger attempted to alight from a train at High Shields station before it had come to a stand, and in doing so fell on to the platform and injured her shoulder - - - - - - -	–	1	–	–	–	–	–	–
8 Dec. -	A passenger attempted to alight from a train at Thorne station before it had come to a stand, and fell, injuring her leg - - - - -	–	1	–	–	–	–	–	–
9 Dec. -	A passenger attempted to alight from a train at Hylton before it had come to a stand, and in doing so fell between the platform and the carriages, and injured her leg - - - - - -	–	1	–	–	–	–	–	–
15 Dec. -	Whilst two men were trespassing on the coal depôts at Ormesby they fell into a cell and were seriously injured - - - - - - -	–	–	–	–	–	2	–	–
20 Dec. -	A man, when attempting to cross the line at a private level-crossing near Pelaw station, was knocked down by a train and injured - - -	–	–	–	1	–	–	–	–
22 Dec. -	A passenger attempted to alight from a train at Plessy station before it had come to a stand, and fell, being somewhat injured - - - -	–	1	–	–	–	–	–	–
22 Dec. -	A trespasser fell from the step of the van of a mineral-train in motion at Brotton, and injured her left arm - - - - - - - -	–	–	–	–	–	1	–	–
	Total, North-Eastern - -	2	19	3	1	7	10	1	1
	North Staffordshire.								
26 Dec. -	An intending passenger, when crossing the line at Cresswell station, was run over by a passenger-train, and so seriously injured that he died two days afterwards - - - - -	1	–	–	–	–	–	–	–

ENGLAND AND WALES.

Accidents to Passengers from their own want of caution, &c.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:									
	North Union.								
23 Oct. -	A passenger-train stopped on the viaduct at Preston, waiting for signal, when a passenger stepped out of the train on to the wall of the viaduct, for a purpose of his own, and fell into a field below, being severely bruised - - - - - -	–	1	–	–	–	–	–	–
	Oldham, Ashton-under-Lyne, and Guide Bridge Junction.								
1 Nov. -	A goods-porter was knocked down by a train and badly shaken, whilst trespassing on the line between Clegg Street and Glodwich Road stations, Oldham	–	–	–	–	–	1	–	–
	Preston and Wyre.								
23 Oct. -	A man attempted to cross the line near Fleetwood, and was knocked down by an engine, and seriously injured - - - - - -	–	–	–	–	–	1	–	–
	Redruth and Chasewater.								
7 Nov. -	A woman when crossing the line at a public level-crossing near Carharrack, was knocked down by the engine of a train, and killed - - - -	–	–	1	–	–	–	–	–
	Sheffield and Midland Committee.								
13 Nov. -	A passenger who had alighted at Hyde station got over the fence near to the ticket-gate, in order to avoid payment of the fare (a companion having kept his ticket), and fell into the street, a distance of 29 feet, being rather severely injured - -	–	1	–	–	–	–	–	–
	South-Eastern.								
8 Oct. -	A passenger alighted from a train before it had stopped at Charing Cross station, and fell between the carriage and platform, and was severely injured	–	1	–	–	–	–	–	–
14 Oct. -	A boy with another lad in the coke-yard at Whitstable apparently endeavoured to get on a truck which was being shunted, but slipped and fell, and was run over, and he died soon afterwards -	–	–	–	–	1	–	–	–
29 Oct. -	A man was found lying dead on the line at Spa Road station, having been run over by a train. It could not be ascertained how he got there, but he had a ticket in his possession - - - - -	1	–	–	–	–	–	–	–
6 Dec. -	* *Suicide.* At Red Hill station a man threw himself in front of an engine, and was run over and killed - - - - - - -	–	–	–	–	1*	–	–	–
	Total, South-Eastern - -	1	1	–	–	2	–	–	–

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

ENGLAND AND WALES.

SCOTLAND.

Accidents to Passengers from their own want of caution, &c.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Taff Vale.**								
29 Nov. -	The captain of a French vessel, whilst trespassing on the line near Bute Dock, Cardiff, was knocked down by an engine and killed - - -	–	–	–	–	1	–	–	–
	West London Extension.								
27 Nov. -	**Suicide.* An inspector of signalmen in the service of the company, whilst lying across the outer rail of the up-line between West Brompton and Chelsea, had his head severed from his body by an engine or train. The coroner's jury returned a verdict of "Suicide whilst of unsound mind" - -	–	–	–	–	1*	–	–	–
	Total, England and Wales -	32	137	12	7	71	31	6	17

SCOTLAND.

SCOTLAND.

1876:	**Caledonian.**								
3 Oct. -	Whilst a coal-porter in the employment of a coal merchant was between two waggons emptying coal out of one of them into a cart at Morrison Street depôt, Edinburgh, several waggons were shunted into the same siding, and he was caught between the buffers, and so severely crushed that he died three days afterwards - - -	–	–	–	–	–	–	1	–
5 Oct. -	When a passenger-train was starting from Crieff Junction a passenger opened the door of a third-class carriage in the rear of the train, and stepped out and fell on the platform, injuring her ankle -	–	1	–	–	–	–	–	–
7 Oct. -	When a passenger-train was entering Orchard Bank station, Perth, and had almost come to a stand, a child four years of age fell out of a third-class carriage on to the platform, and had her leg injured. The carriage-door had been properly fastened -	–	1	–	–	–	–	–	–
9 Oct. -	A man, when crossing the line at Gartsherrie, was knocked down by an engine and injured - -	–	–	–	–	–	–	–	1
10 Oct. -	A trespasser, when crossing the line at Beattock, was caught by the engine of the up limited mail, and thrown on to the up-platform and fatally injured -	–	–	–	–	1	–	–	–
12 Oct. -	A coal-trimmer in the employment of a stevedore was found dead in the crane siding, General Terminus, Glasgow. It was supposed that while going home from work through the goods-yard, he was knocked down and killed by a Glasgow and South-Western Company's train - - - - -	–	–	–	–	–	–	1	–
15 Oct. -	When an engine was returning from Benhar the driver observed a man lying in the "six-foot" way about 100 yards inside the down distant signal. The man stated that an up goods train had knocked him down and passed over his legs - - -	–	–	–	–	–	1	–	–

SCOTLAND. Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Accidents to Passengers from their own want of caution, &c.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Caledonian**—*cont.*								
21 Oct. -	While an engine was running between Ross Junction and Camp Bridge the driver observed a man lying on the "four-foot" way, and on stopping found that he was dead. The body had evidently been run over by a passing train - - - -	–	–	–	–	1	–	–	–
23 Oct. -	A man was found lying on the line near Port Glasgow station with his left side injured. He does not appear to have been run over by any train, nor had he any recollection of how he was hurt, being much the worse of drink at the time - -	–	–	–	–	–	1	–	–
26 Oct. -	When a train stopped at Cambuslang a third-class passenger, in stepping out of the carriage in which she rode, stumbled and fell, injuring her back -	–	1	–	–	–	–	–	–
3 Nov. -	When a passenger-train was entering the rock-cutting at the east end of Bishopton tunnel, the dead body of a woman was found lying across the inner rail of the "four-foot" way - - - -	–	–	–	–	1	–	–	–
11 Nov. -	When a train was about half a mile distant from Killin a third-class passenger, who was said to have been under the influence of drink at the time, opened the carriage-door and fell out, being slightly injured - - - - - -	–	1	–	–	–	–	–	–
13 Nov. -	On the arrival of a train at Bandoran a third-class passenger fell when stepping out of a carriage, and received a slight cut on the back of his head, and complained of pain in his back - - -	–	1	–	–	–	–	–	–
9 Dec. -	A waggon struck a cart which was foul of the turntable at the General Terminus, Glasgow, knocking the cart into the Clyde, and throwing out the man in charge, who had one of his legs injured -	–	–	–	–	–	–	–	1
16 Dec. -	As a train was approaching Lawrencekirk a passenger attempted to leave the train, and was injured by falling between the carriages and platform -	–	1	–	–	–	–	–	–
18 Dec. -	A workman in the employ of the Caledonian Distillery Co., whilst engaged in repairing a waggon in the siding at Edinburgh, was fatally injured by some waggons being shunted into the siding - -	–	–	–	–	–	–	1	–
24 Dec. -	The body of a woman, who had been killed while trespassing, was found upon the line near Dubton -	–	–	–	–	1	–	–	–
30 Dec. -	†While a passenger-train was running slowly past Rosemill Train Staff Signal cabin a boy fell out of a carriage, and was cut across the temple, and received a blow on the nose. The boy stated the door flew open while he was putting up the carriage window - - - - - -	–	1†	–	–	–	–	–	–
30 Dec. -	A passenger fell in alighting from a train at Larkhall, and fractured one of her legs - -	–	1	–	–	–	–	–	–
	Total, Caledonian - - -	–	8	–	–	4	2	3	2
	Dundee Joint Station.								
21 Dec. -	A servant of the Dundee Harbour trustees was jammed between the buffers of some waggons -	–	–	–	–	–	–	–	1
	Glasgow and Paisley Joint.								
11 Nov. -	A man was found lying on the line at Cook Street Bridge, Glasgow, with injuries which proved fatal, having apparently been run over by an engine -	–	–	–	–	1	–	–	–

† This accident was beyond the passenger's control.

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:									
	Glasgow and South-Western.								
2 Nov. -	A third-class passenger attempted to get out of a train before it was stopped at Mauchline station, and slipped between the carriage and the platform, and was severely crushed - - - -	–	1	–	–	–	–	–	–
15 Dec. -	A farm-servant was knocked down by a passenger-train when trespassing at a level-crossing near Hollybush station; some of her ribs were broken, and she sustained other injuries - - -	–	–	–	–	–	1	–	–
20 Dec. -	A passenger, in attempting to leave a train before it had stopped at Milliken Park, fell between the platform and carriage, and had his back and legs injured	–	1	–	–	–	–	–	–
	Total, Glasgow and South-Western -	–	2	–	–	–	1	–	–
	Glasgow, Barrhead, and Kilmarnock Joint.								
29 Dec. -	A passenger, in leaving a train at Barrhead station while it was in motion, fell between the platform and carriages, and sustained severe injuries -	–	1	–	–	–	–	–	–
	Highland.								
23 Oct. -	A trespasser was run over and killed by a train near Murthly station - - - - -	–	–	–	–	1	–	–	–
4 Nov. -	A trespasser was run over and killed by a train near Muir of Ord station, while under the influence of drink - - - - - - -	–	–	–	–	1	–	–	–
	Total, Highland - -	–	–	–	–	2	–	–	–
	North British.								
22 Sept. -	A boy, when running alongside a guard's-van in motion at Whitemyre Junction station, stumbled and fell, with his arm on the rails, where it was run over, and had to be amputated - -	–	–	–	–	–	1	–	–
30 Sept. -	A passenger, when leaving a carriage in motion at Cowlairs, slipped and fell between the carriage and the platform, and had three ribs broken - -	–	1	–	–	–	–	–	–
7 Oct. -	A man was found lying on the line near Lenzie with his head injured. He was under the influence of drink, and could give no account of how he came on to the line - - - - -	–	–	–	–	–	1	–	–
16 Oct. -	A man who was engaged loading sheep at Hawick stepped from the loading bank on to the rails, and on some waggons being shunted into the siding attempted to regain the bank, but was caught between it and the waggons, receiving fatal injury	–	–	–	–	–	–	1	–
28 Oct. -	At Junction Road station, Edinburgh, a passenger, in attempting to get into a train in motion, slipped and fell between it and the platform, and was slightly injured - - - - -	–	1	–	–	–	–	–	–
14 Nov. -	A coal-carter was standing on the buffers of a waggon unloading coals in a siding at Maryhill, and on some other waggons being shunted against it the buffers over-rode each other, and bruised his foot -	–	–	–	–	–	–	–	1

SCOTLAND. Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

IRELAND.

Accidents to Passengers from their own want of caution, &c.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**North British—*cont.***								
22 Nov. -	A man was found on the line at Parkhead station with his hand and head injured. He was supposed to have been trespassing, and knocked down by a train - - - - - - -	–	–	–	–	–	1	–	–
7 Dec. -	The body of a man who had been run over while trespassing was found on the line near Portobello station - - - - - - -	–	–	–	–	1	–	–	–
11 Dec. -	A passenger leaped out of a train when passing through Haymarket tunnel, Edinburgh, and had his head cut - - - - - - -	–	1	–	–	–	–	–	–
14 Dec. -	**Suicide.* A man committed suicide by stepping in front of a mineral-train, which ran over him near Dunfermline - - - - - -	–	–	–	–	1*	–	–	–
28 Dec. -	A trespasser was struck by the engine of a goods-train at Causewayhead, and fatally injured -	–	–	–	–	1	–	–	–
	Total, North British - -	–	3	–	–	3	3	1	1
	Total, Scotland -	–	14	–	–	10	6	4	4

IRELAND.

IRELAND.

1876:	**Belfast and Northern Counties.**								
12 Oct. -	A cattle-drover was climbing up a waggon while it was in motion at Belfast goods-station, and slipped and fell under the waggon and had his foot crushed	–	–	–	–	–	1	–	–
9 Dec. -	A passenger, in attempting to get into a train in motion at Coleraine station, fell between the carriage and platform, and was said to have injured his spine - - - - - - -	–	1	–	–	–	–	–	–
	Total, Belfast and Northern Counties -	–	1	–	–	–	1	–	–
	Great Northern (of Ireland).								
15 Nov. -	A passenger was thrown against the door of a carriage, and had his head cut, when in the act of getting out close to Lisburn station, while the train was being drawn forward to the platform, it having first stopped short - - - - - -	–	1	–	–	–	–	–	–
27 Nov. -	A man stepped from an occupation level-crossing at Legatiggle, immediately in front of an advancing train, and although the driver whistled, the man did not leave the line, and was run over and killed. He was subject to epileptic fits - - - -	–	–	1	–	–	–	–	–
7 Dec. -	A carrier got on to a waggon at Derry, to unload some goods he had to cart from the station, when the train moved, and he lost his balance and fell to the ground, breaking one of his ribs and slightly spraining one of his wrists - - -	–	–	–	–	–	–	–	1
8 Dec. -	A passenger was knocked down by the door of a carriage when alighting from a train before it had been properly drawn up to the station at Balmoral, and received a spinal concussion - - -	–	1	–	–	–	–	–	–
	Total, Great Northern (of Ireland) -	–	2	1	–	–	–	–	1

Part II.—Return of Accidents to Passengers from their own want of Caution, Trespassers, &c.—*cont.*

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers.		Other Persons.					
				Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
1876:	**Waterford and Limerick.**								
11 Nov. -	A man was bruised between a waggon and stop-block at Clarecastle, and so severely injured that he died the following day - - - - -	–	–	–	–	–	–	1	–
7 Dec. -	A trespasser, while crossing the line at Kyber Pass, about two miles west of Cahir station, was knocked down by the engine of a goods-train and killed -	–	–	–	–	1	–	–	–
13 Dec. -	A man was run over and killed by a waggon whilst trespassing in a siding at Rathkeale station -	–	–	–	–	1	–	–	–
	Total, Waterford and Limerick -	–	–	–	–	2	–	1	–
	Total, Ireland -	–	3	1	–	2	1	1	1

PART III.

RETURN of ACCIDENTS reported to the BOARD OF TRADE during the Months of October, November, and December 1876, by the several RAILWAY COMPANIES as having occurred to SERVANTS in their own employ, or in the employ of Contractors, whilst performing duties connected directly with the transit of passengers and goods, exclusive of those killed or injured by Accidents to Trains, &c. in Part I.

KEY.

This TABLE indicates the circumstances under which the accidents in this Part occurred, and is referred to by the figures in the sixth column.

—	No. of Servants Killed.	No. of Servants Injured.	—	No. of Servants Killed.	No. of Servants Injured.
1. During shunting operations - -	28	107	**11.** Whilst walking, crossing, or standing on the line - - - - -	49	45
2. Falling off engines, vans, waggons, &c. -	5	50	**12.** Whilst passing between vehicles -	4	19
3. Coming in contact with over-bridges, &c. during the travelling of trains - -	3	9	**13.** Whilst attending to the machinery of engines, cleaning them, &c. - -	3	31
4. Coming in contact while shunting with vehicles, &c. standing in adjoining lines	4	22	**14.** Whilst attending to gates at level-crossings - - - - - -	2	1
5. Getting on or off trains, engines, &c. -	10	58	**15.** Falling or being caught between vehicles and platforms - - - -	2	27
6. Whilst loading, unloading, or sheeting -	1	22	**16.** Falling off ladders, scaffolds, platforms, &c. - - - - - -	1	2
7. Whilst breaking, spragging, or chocking wheels - - - - -	3	33	**17.** By falling of lamps, waggon-doors, timber, weights, &c. - - - - -	—	9
8. Whilst working at cranes or capstans -	2	18	**18.** Whilst coupling or uncoupling waggons -	14	114
9. Whilst working on the permanent-way or in sidings - - - - -	33	29	**19.** Miscellaneous - - - - -	3	25
10. Whilst walking along the line on the way home or to work - - -	4	6	Total, United Kingdom -	171	627

ENGLAND AND WALES. Accidents to Servants.

ENGLAND AND WALES.

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on this page.	Remarks.
1876:	**Cheshire Lines Committee.**					
6 Oct. -	Thomas Whiteoak	Platelayer -	Brunswick Station -	Fatal - -	9	
7 Oct. -	William Ashworth	Contractor's painter.	Northenden - -	Arm broken -	11	
4 Dec. -	Richard Martin -	Shunter -	Timperley - -	Fatal - -	11	
	Total killed, 2; *injured*, 1.					
	Furness.					
14 Oct. -	John Lund -	Labourer -	Kirkby - -	Stunned - -	5	
30 Nov. -	James Harper -	Porter - -	Park Station - -	Leg slightly crushed	1	
4 Dec. -	John Greenhow -	Porter - -	Whitehaven - -	Fatal - -	11	
9 Dec. -	James Walton -	Fireman -	Seascale - -	Body crushed -	15	
9 Dec. -	William Bell -	Guard - -	Cark - - -	Head cut - -	5	
14 Dec. -	Joseph Winder -	Pointsman -	Barrow - -	Fatal - -	11	
23 Dec. -	Isaac Cooper -	Fireman -	Underhill - -	Thumb split -	18	
	Total killed, 2; *injured*, 5.					
	Great Eastern.					
29 Sept. -	— Boast - -	Goods-guard -	Stratford - -	Head injured -	1	
3 Oct. -	F. Cox - -	Foreman-porter	London Docks -	Contused pelvis -	15	
5 Oct. -	E. Jackson -	Shunter -	Stratford - -	Knee hurt - -	1	
8 Oct. -	— Walker -	Shunter -	Fakenham - -	Finger cut - -	1	
11 Oct. -	— Nicholls -	Porter - -	Stratford - -	Bruised - -	1	
19 Oct. -	— Welham -	Goods-porter -	Thurston - -	Leg amputated -	1	
21 Oct. -	H. Ward - -	Yardsman -	Peterborough - -	Foot crushed -	18	
21 Oct. -	F. Rawlings -	Shunter -	Stratford - -	Foot bruised -	1	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876:	**Great Eastern—*cont.***					
24 Oct.	Thomas Lockett	Transhipper	Stowmarket	Finger torn	5	
26 Oct.	Robert Gostling	Goods-guard	Devonshire Street	Fatal	1	
28 Oct.	Charles Storey	Yardsman	Hadleigh	Bruised	1	
1 Nov.	F. Gooding	Shunter	Stratford	Face injured	1	
4 Nov.	William Fenn	Goods-guard	Near Aldeby	Fatal	19	
8 Nov.	H. W. Tuffill	Porter	Ely	Severely bruised	12	
8 Nov.	James Riches	Signalman	Peterborough	Head cut	1	
10 Nov.	J. Golding	Horse-driver	Brick Lane	Arm broken	1	
11 Nov.	G. Stokes	Platelayer	Bow Junction	Fatal	11	
16 Nov.	John Beer	Platelayer	Near Temple Mills	Fatal	11	
23 Nov.	Amos Hines	Porter	Diss	Finger crushed	18	
24 Nov.	Henry Mayhew	Passenger-guard	Near Bruce Grove	Head cut	3	
27 Nov.	F. Hodge	Shunter	March	Severe	1	
2 Dec.	S. Cook	Platelayer	Near Harlow	Fatal	11	
5 Dec.	J. Hill	Porter	Stratford	Bruised	19	
6 Dec.	Robert Prowse	Passenger-guard	Tottenham	Leg broken	15	
7 Dec.	F. Sewell	Carriage-washer	Stratford	Fatal	11	
8 Dec.	— Knighton	Horseman	Peterborough	Shaken and bruised	1	
14 Dec.	S. Adams	Shunter	Stratford	Head injured	1	
14 Dec.	Edward Edwards	Porter	Brick Lane	Bruised arm	2	
19 Dec.	Thomas Lee	Gate-lad	Church Crossing	Fatal	14	
21 Dec.	— Kemp	Bridgeman	Beccles	Rib injured	5	
22 Dec.	George Chapple	Porter	Brick Lane	Broken ribs	18	Beyond his control.
29 Dec.	— Holdsworth	Labourer	Stratford	Shaken and head cut	11	
29 Dec.	— Perryman	Shunter	Stratford	Knee cap injured	5	
30 Dec.	Robert Dowling	Labourer	Stratford	Fatal	9	
	Total killed, 8; *injured,* 26.					
	Great Northern.					
2 Oct.	— Denberry	Breaksman	Wrenthorpe	Foot crushed	18	
11 Oct.	John Wilson	Guard	King's Cross	Leg had to be amputated.	7	
11 Oct.	— Hall	Porter	Finsbury Park	Head cut	18	
13 Oct.	George Clarke	Goods-guard	New England	Fatal	11	
18 Oct.	F. Payne	Greaser	New England	Fatal	4	
19 Oct.	William Willey	Number-taker	Near Horsforth	Leg injured	5	
20 Oct.	W. Mountain	Greaser	Boston	Toe crushed	5	
24 Oct.	Joseph Simmonds	Goods-guard	New England	Fatal	11	
28 Oct.	Farrow Jacklin	Platelayer	Doncaster	Fatal	9	
31 Oct.	George Medwell	Engineer's-department.	Bottesford	Severe	5	
3 Nov.	— Mitchell	Shunter	Wrenthorpe	Finger cut off	18	
4 Nov.	Joseph Steed	Not stated	Near Bowling	Fatal	10	
6 Nov.	Henry Stubbings, Norman Hurst	Platelayers	Retford	Fatal; Slight	9	
8 Nov.	Charles Smallman	Porter	Stamford	Foot crushed	1	
8 Nov.	P. Moriarty	Porter	King's Cross	Face cut	5	
10 Nov.	William Nutting	Carriage-examiner	Hitchin	Serious	15	
10 Nov.	F. Jefford	Horse-shunter	King's Cross	Thigh fractured	5	
14 Nov.	John Cranfield	Loco.-department	Colwick	Fatal	13	
15 Nov.	H. Cook	Porter	King's Cross	Slight	7	
22 Nov.	J. Hawkins	Porter	Boston	Finger injured	18	
27 Nov.	J. W. Beadell	Porter	King's Cross	Severe	18	
5 Dec.	William Naylor	Shunter	Finsbury Park	Fatal	18	
5 Dec.	Ebenezer King	Fireman	Batley	Fatal	13	
8 Dec.	E. Tolson	Number-taker	Halifax	Fatal	1	Beyond his control.
11 Dec.	— Colbert	Porter	Horncastle	Slight	18	
15 Dec.	— Rowlatt	Engine-driver	Hatfield	Arm broken	13	
16 Dec.	J. Ward	Waggon-examiner	King's Cross	Face and legs injured	4	
23 Dec.	George Sayles	Platelayer	Doncaster	Fatal	9	
30 Dec.	A. J. Baker	Cleaner	King's Cross	Fatal	13	
	Total killed, 12; *injured,* 18.					
	Great Western.					
2 Oct.	T. Martin	Number-taker	Neath	Arms crushed	7	
4 Oct.	J. Challice	Super. porter	Exeter	Arm crushed	1	
4 Oct.	E. Reason	Porter	Heyford	Hand cut	8	
4 Oct.	W. Kear	Shunter	Wolverhampton	Body bruised	18	
7 Oct.	G. Dunn	Goods-guard	Wellington	Body crushed	19	
7 Oct.	T. Evans	Switchman	Preesgweene	Foot sprained	5	The door of his van came in contact with the mail apparatus.
9 Oct.	G. Hammond	Contractor's horse-driver.	Paddington	Shoulders bruised	4	
13 Oct.	J. Gilroy	Engineman	Wolverhampton	Chest bruised	13	
14 Oct.	J. Coleman	Porter	Perranwell	Hand crushed	18	
15 Oct.	C. Goodship	Engineman	Mansion House	Loins squeezed	3	
15 Oct.	J. C. Bath	Gatekeeper	Near Aberdare	Knee cut	5	
16 Oct.	F. Howard	Shunter	Exeter	Body crushed	18	
16 Oct.	J. Flower	Shunter	Coed-y-gric	Leg injured	1	
16 Oct.	R. Overton	Horse-driver	Tipton Basin	Finger crushed	7	
17 Oct.	J. Wise	Contractor's servant.	West Drayton	Head and back injured.	11	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876:	**Great Western—*cont.***					
19 Oct.	J. Hatwood, W. Jeffrys, W. Mayne	Platelayers	Glyn Neath	Bodies bruised	9	Beyond their control.
19 Oct.	G. Gilke	Porter	Moreton	Head cut	2	
19 Oct.	J. Bagshaw	Porter	Manchester	Body crushed	6	
20 Oct.	J. Drewett	Porter	Quakers Yard	Foot sprained	1	
20 Oct.	J. Davis	Porter	Aylesbury	Leg bruised	18	
22 Oct.	J. Hunt	Porter	Bristol	Fatal	2	
24 Oct.	J. Buckingham	Porter	Bourton-on-Water	Foot crushed	11	
25 Oct.	J. Hall	Guard	Tredegar	Leg crushed	1	
27 Oct.	J. Stoneman	Loco. labourer	Taunton	Hand crushed	19	
28 Oct.	J. Morris	Fireman	Keynsham	Head injured	7	
30 Oct.	J. Hutchings	Spring-maker	Westbourne Park	Leg broken	11	
30 Oct.	J. Rawlins	Engineman	Tipton	Leg crushed	1	
31 Oct.	J. Richardson	Porter	Smithfield	Slight	12	
1 Nov.	J. Taylor	Fitter'sapprentice	Barton	Arm sprained	2	
1 Nov.	W. Davies	Platelayer	Swansea	Hip injured	4	
1 Nov.	J. Saw	Porter	Brentford	Fatal	1	
2 Nov.	D. Gardner	Breaksman	Hereford	Hand crushed	1	
2 Nov.	W. Smith	Breaksman	Henwick	Back ricked	1	
2 Nov.	W. Adams	Porter	Portskewett	Head injured	1	
3 Nov.	J. Harris	Engine-cleaner	Swindon	Feet crushed	11	
3 Nov.	T. Davies	Engine-driver	Stormy	Hip injured	2	
3 Nov.	T. Hall	Shunter	Pylle Hill	Foot injured	18	
4 Nov.	J. Covey	Cleaner	Oxford	Arm pinched	19	
5 Nov.	J. Painting	Platelayer	Knowle	Fatal	9	Fog-signalling.
7 Nov.	G. Reeves	Shunter	Paddington	Hand injured	18	
8 Nov.	W. Reynolds	Engine-cleaner	Bordesley	Leg injured	11	
8 Nov.	E. Palmer	Greaser	Taunton	Shaken	17	
9 Nov.	J. Phillips	Platelayer	Brettle Lane	Fatal	9	
11 Nov.	J. Joseph	Porter	Maesteg	Finger injured	18	
11 Nov.	J. Allen	Shunter	Paddington	Fatal	1	
12 Nov.	T. Rutter	Porter	Bristol	Internally injured	11	
12 Nov.	W. Stroud	Porter	Southall	Leg and arm bruised	1	Beyond his control.
13 Nov.	E. Meredith	Yardsman	Aberdare	Internally injured	12	
13 Nov.	A. Laver	Porter	Bristol	Slight	12	
14 Nov.	J. Griffiths	Porter	Princes End	Fatal	11	
15 Nov.	W. Hurcombe	Porter	Hockley	Chest and arms bruised	12	
16 Nov.	G. Chand	Guard	Cwmglyn	Thigh bruised	7	
18 Nov.	W. Crease	Porter	Taunton	Foot bruised	1	
21 Nov.	T. Price	Fireman	Bristol	Foot crushed	13	
21 Nov.	M. West	Porter	Paddington	Foot injured	4	
21 Nov.	W. Fuller	Guard	Ivybridge	Arm bruised	5	
22 Nov.	S. Cox	Platelayer	Slough	Fatal	11	
23 Nov.	T. Green	Guard	Cranmore	Finger pinched	7	
23 Nov.	J. Baker	Shunter	Taunton	Finger crushed	18	
23 Nov.	T. Walters	Porter	Stonehouse	Toe broken	5	
24 Nov.	J. Thomas	Contractor's boy	Swansea	Toe crushed	11	
24 Nov.	G. Saxby	Super. porter	Paddington	Leg grazed	2	
24 Nov.	J. Leach	Guard	Neath	Arm injured	1	
25 Nov.	G. Hann	Policeman	Box	Severely shaken	11	
25 Nov.	J. Hunt	Engineman	Blaina	Foot crushed	12	
25 Nov.	J. Goode	Breaksman	Near Magor	Face and arm injured	2	
25 Nov.	J. Taylor	Platelayer	Shifnal	Face cut	9	
26 Nov.	J. Davies	Porter	Witham	Arm crushed	18	
26 Nov.	J. Burge	Porter	Plymouth	Internal	18	
27 Nov.	J. Conner	Engineman	Sirhowy	Toe cut off	2	
28 Nov.	J. Ambrose	Shunter	Reading	Head and shoulder injured.	4	
28 Nov.	W. E. Dean	Mineral guard	Newport	Fatal	18	
29 Nov.	G. Lee	Platelayer	Oakengates	Hand crushed	9	
30 Nov.	W. Maunder	Foreman-porter	Bristol	Internal	11	
1 Dec.	J. Trout	Porter	Plymouth	Fingers crushed	18	
2 Dec.	A. Hedges	Porter	Hockley	Collar-bone broken	2	
2 Dec.	G. Hirons	Porter	Twyford	Rib injured	9	
2 Dec.	Thomas Jones	Super. porter	Pontypool Road	Foot bruised	17	
2 Dec.	J. Wakefield	Fireman	Hereford	Face cut	3	
6 Dec.	T. Williams	Breaksman	Ruabon	Leg broken	5	
7 Dec.	W. Rodwell	Platelayer	Taplow	Fatal	11	
9 Dec.	W. Stacey	Breaksman	Hanborough	Hand squeezed	18	
9 Dec.	W. Hamilton	Super. porter	Exeter	Head cut	2	
9 Dec.	G. Palmer	Labourer	Swindon	Leg bruised	18	
11 Dec.	H. Bartlett	Breaksman	Llancaich	Fatal	7	
12 Dec.	J. Shrubb	Shunter	Paddington	Leg squeezed	1	
13 Dec.	E. Roberts	Breaksman	Near Manchester	Fatal	5	
13 Dec.	J. Winstorrin	Platelayer	Near Upwey	Fatal	9	
13 Dec.	T. Bullock	Foreman-porter	Weymouth	Hand injured	18	
14 Dec.	T. Griffiths	Shunter	Over Junction	Arm crushed	18	
14 Dec.	R. Pritchard	Porter	Llandebie	Fingers crushed	18	
15 Dec.	W. Beckett	Fireman	Bordesley	Foot bruised	13	
15 Dec.	W. Rogers	Lifter	Shrewsbury	Foot crushed	1	
16 Dec.	W. Vincent	Super. porter	Bristol	Body squeezed	6	
16 Dec.	W. Hawkins	Goods-guard	Trowbridge	Fatal	1	
17 Dec.	W. Smith	Packer	Oxford	Body bruised	11	
18 Dec.	A. Thomas	Engineman	Round Oak	Hand bruised	13	
19 Dec.	W. Hallett	Labourer	Keyham Viaduct	Fatal	16	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876 :	**Great Western—*cont.***					
22 Dec. -	J. Pullman -	Guard - -	Holt Junction - -	Fingers pinched -	18	
23 Dec. -	M. Hall - -	Permanent-way-man.	Pontypool - -	Head injured and leg broken.	9	
23 Dec. -	R. Upton - -	Porter - -	Plymouth - -	Face cut - -	5	
23 Dec. -	J. Carpenter -	Fireman -	Swindon - -	Shoulder dislocated -	2	
24 Dec. -	E. Swinney -	Engineman -	Plymouth - -	Arm cut - -	2	
27 Dec. -	J. Clarke - -	Porter - -	Smithfield - -	Foot crushed -	18	
28 Dec. -	J. Clemerson -	Shunter -	Newport - -	Fingers crushed -	18	
28 Dec. -	B. Broadhurst -	Engineman -	Wednesbury - -	Toe crushed -	13	
29 Dec. -	W. Clinton -	Platelayer -	Droitwich - -	Fatal - -	9	
29 Dec. -	W. Lovegrove -	Shunter -	Reading - -	Ankle sprained -	5	
29 Dec. -	J. Hambrow -	Porter - -	Bristol - -	Fingers crushed -	18	
31 Dec. -	W. Wiltshire -	Fireman -	Swindon - -	Face bruised -	5	
	Total killed, 15 ; *injured*, 97.					
	Isle of Wight.					
23 Nov. -	William Salter -	Platelayer -	Near Ryde - -	Fatal - -	9	
4 Dec. -	John Smith -	Platelayer -	Near Smallbrooke -	Fatal - -	9	
	Total killed, 2.					
	Lancashire and Yorkshire.					
25 June -	W. Jackson -	Goods-guard -	Wakefield - -	Foot injured -	5	
14 July -	J. Jacques -	Signalman -	Rochdale - -	Finger injured -	19	Beyond his control.
19 July -	G. H. Smith -	Goods-guard -	Lockwood - -	Heel sprained -	5	
9 Aug. -	R. Warburton -	Engine-driver -	Bury - - -	Hand cut - -	13	
12 Aug. -	S. Taylor - -	Goods-porter -	Cleckheaton - -	Crushed - -	6	
18 Aug. -	J. Pearce - -	Hooker-on -	Manchester - -	Leg cut - -	8	
18 Aug. -	H. Phenna -	Engine driver -	Salford - -	Eye injured -	19	Beyond his control.
21 Aug. -	J. Boyle - -	Goods-porter -	Blackburn - -	Shaken - -	2	
30 Aug. -	J. Mills - -	Fireman -	Rochdale - -	Arm crushed -	18	
31 Aug. -	J. Kirkby -	Capstanman -	Liverpool - -	Leg cut - -	8	Beyond his control.
8 Sept. -	W. Ross - -	Breaksman -	Manchester - -	Foot sprained -	1	
9 Sept. -	R. Woods -	Fireman -	Blackburn - -	Foot injured -	1	
13 Sept. -	J. Woodhead -	Shunter -	Horbury - -	Hand cut - -	18	
2 Oct. -	George Gordon -	Carter - -	Wakefield - -	Crushed - -	12	
2 Oct. -	James Burnett -	Porter - -	Liverpool - -	Slightly bruised -	6	
2 Oct. -	Robert Rice -	Engine-driver -	Rose Grove - -	Back injured -	13	
3 Oct. -	Thomas Green -	Contractor's servant.	Bolton - -	Head and arm injured.	10	
6 Oct. -	— Broadhurst -	Porter - -	Wakefield - -	Leg injured - -	18	
7 Oct. -	T. Close - -	Checker -	Bradford - -	Fatal - -	8	
7 Oct. -	Thomas Durran -	Platelayer -	Oakenshaw - -	Fatal - -	9	
7 Oct. -	D. Hunt - -	Checker -	Wigan - -	Arm sprained -	2	
10 Oct. -	George Langdale -	Goods-guard -	Bolton - -	Foot sprained -	5	
10 Oct. -	G. Rushworth -	Guard - -	Wakefield - -	Foot sprained -	1	
12 Oct. -	J. Sledge - -	Goods-guard -	Miles Platting - -	Ankle sprained -	19	
13 Oct. -	Henry Middleton -	Platelayer -	Near Ashton - -	Foot amputated -	9	Beyond his control.
13 Oct. -	Thomas Starkey -	Goods-porter -	Huddersfield - -	Fingers crushed -	8	
13 Oct. -	J. Haigh - -	Goods-guard -	Wakefield - -	Foot sprained -	2	
14 Oct. -	Samuel Petty -	Chain-lad -	Halifax - -	Hip injured - -	11	
14 Oct. -	John Cheadle -	Fireman -	Fleetwood - -	Back injured -	1	
16 Oct. -	Alfred Lawson -	Goods-guard -	Liverpool - -	Face cut - -	1	
17 Oct. -	J. W. Lund -	Chain-boy -	Leeds - - -	Slight - -	15	
19 Oct. -	R. Pickles -	Yardsman -	Wakefield - -	Crushed - -	12	
20 Oct. -	— Wright -	Pointsman -	Clifton Junction -	Finger end cut off -	19	
21 Oct. -	William Campayne	Coalman -	Wakefield - -	Foot crushed -	1	
23 Oct. -	Smith Green -	Chain-boy -	Halifax - -	Fatal - -	18	
23 Oct. -	A. W. Pattison -	Chain-boy -	Leeds - - -	Fatal - -	18	
24 Oct. -	J. Goldthorpe -	Shunter -	Wakefield - -	Hand injured -	18	
24 Oct. -	— Armstrong -	Goods-guard -	Bacup - - -	Arm crushed -	18	Beyond his control.
26 Oct. -	— Haverson -	Porter - -	Wakefield - -	Back injured -	2	Beyond his control.
26 Oct. -	Thomas Nelson -	Goods-guard -	Middleton - -	Knee injured -	1	
27 Oct. -	George Taylor -	Porter - -	Rochdale - -	Body bruised -	9	
27 Oct. -	George Watson -	Goods-guard -	Preston - -	Finger injured -	18	
27 Oct. -	Thomas Bailey -	Bankrider -	Salford - -	Crushed - -	18	
27 Oct. -	Thomas Leach -	Porter - -	Rochdale - -	Leg bruised - -	5	
29 Oct. -	M. Swindlehurst -	Engine-driver -	Salford - -	Crushed - -	15	
30 Oct. -	G. Reid - -	Fireman -	Salford - -	Ankle sprained -	13	
30 Oct. -	Fergus Crooks -	Yardsman -	Middleton - -	Foot sprained -	7	
2 Nov. -	H. Colcough -	Ballastman -	Newton Heath -	Fatal - -	11	
3 Nov. -	Edward Lee -	Chain-boy -	Leeds - - -	Finger cut - -	7	
4 Nov. -	C. E. Hemingway -	Porter - -	Dewsbury - -	Hand cut - -	12	
4 Nov. -	James Laycock -	Guard - -	Accrington - -	Legs run over -	1	
4 Nov. -	— Parker -	Guard - -	Sandhills - -	Leg cut - -	5	
4 Nov. -	Henry Nolan -	Cotton-rider -	Near Liverpool -	Fatal - -	2	
4 Nov. -	Henry Sharples -	Goods-guard -	Blackburn - -	Foot sprained -	2	Beyond his control.
6 Nov. -	Thomas Evans -	Fireman -	Castleton - -	Fatal - -	11	
6 Nov. -	James Bond -	Labourer -	Manchester - -	Severe - -	11	
6 Nov. -	John Knowles -	Engine-cleaner -	Lowmoor - -	Hand scalded -	19	Beyond his control.
7 Nov. -	Frederick Ingham	Telegraph-boy -	Staleybridge - -	Fatal - -	5	
9 Nov. -	James Harris -	Yardsman -	Blackburn - -	Crushed - -	11	
9 Nov. -	J. Smith - -	Porter - -	Rochdale - -	Thigh injured -	15	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876:	**Lancashire and Yorkshire—*cont.***					
10 Nov. -	J. Seddon -	Night-shedman -	Bury - - -	Fatal - -	11	
10 Nov. -	George Berry -	Goods-porter -	Burnley - -	Hand crushed -	8	
11 Nov. -	W. Henry -	Shunter -	Salford - -	Foot injured -	1	
12 Nov. -	William Walton -	Porter - -	Liverpool - -	Knee injured -	6	Beyond his control.
13 Nov. -	M. Scoffing -	Breaksman -	Goole - - -	Shaken - -	7	Beyond his control.
14 Nov. -	John Duckworth -	Guard - -	Padiham - -	Crushed - -	19	
14 Nov. -	T. Simpson -	Engine-driver -	Knottingley - -	Wrist sprained -	13	
15 Nov. -	J. H. Brooke -	Shunter -	Huddersfield - -	Mouth injured -	1	Beyond his control.
15 Nov. -	John Banks -	Fireman -	Lytham - -	Knee injured -	2	
15 Nov. -	W. Mollinson -	Horse-boy -	Wakefield - -	Finger crushed -	7	
16 Nov. -	W. Gardiner -	Goods-guard -	Baxenden - -	Fatal - -	1	
16 Nov. -	R. Stockdale -	Chain-boy -	Leeds - - -	Foot crushed -	1	
16 Nov. -	H. Duckworth -	Goods-guard -	Manchester - -	Arm crushed -	18	
18 Nov. -	Robert Crompton -	Goods-guard -	Bolton - -	Fatal - -	4	
18 Nov. -	H. Stead - -	Goods-guard -	Knottingley - -	Ankle sprained -	5	
23 Nov. -	J. Hill - -	Goods-guard -	North Dean - -	Fatal - -	11	
28 Nov. -	Patrick Darcy -	Shunter -	Miles Platting - -	Foot run over -	5	
29 Nov. -	George Bennett -	Chain-boy -	Leeds - - -	Crushed - -	15	
29 Nov. -	John Chadwick -	Fireman -	Wigan - -	Hand scalded -	13	
30 Nov. -	— Atherton -	Foreman-porter	Bolton - -	Legs bruised -	15	
30 Nov. -	Edward Gledhill -	Fog-signalman -	Ravensthorpe - -	Fatal - -	9	Fog signalling.
Dec. -	George Bradley -	Porter -	Brighouse - -	Finger injured -	18	
1 Dec. -	James Dignan -	Shunt-boy -	Halifax - -	Crushed - -	18	
1 Dec. -	Edward Tyner -	Porter - -	Preston - -	Chest crushed -	15	
2 Dec. -	J. Wagg - -	Goods-guard -	Ramsbottom - -	Crushed - -	18	
2 Dec. -	R. Dawson -	Goods-guard -	Wigan - -	Shoulder injured -	17	
2 Dec. -	Edward Harrison -	Fireman -	Liverpool - -	Eye burnt - -	13	Beyond his control.
4 Dec. -	William Gibbons -	Waggon-greaser	Salford - -	Ribs crushed -	12	
4 Dec. -	Joseph Birtwistle -	Shunter -	Chatburn - -	Crushed - -	18	Beyond his control.
5 Dec. -	James Deakin -	Engine-driver -	Miles Platting - -	Ribs fractured -	15	
6 Dec. -	Henry Britton -	Goods-guard -	Sandhills - -	Leg and back injured	1	
7 Dec. -	J. Kirkham -	Goods-guard -	Salford - -	Leg injured - -	1	
8 Dec. -	James Cain -	Engine-driver -	Ramsbottom - -	Arm fractured -	2	
9 Dec. -	R. Dootson -	Platelayer -	Radcliffe - -	Fatal - -	9	
11 Dec. -	James Gorton -	Goods-guard -	Hebden Bridge -	Arm broken and crushed	18	
12 Dec. -	Caleb Hoyle -	Goods-porter -	Rishton - -	Crushed - -	12	
13 Dec. -	Joseph Atkinson -	Platelayer -	Castleford - -	Hand crushed -	6	
13 Dec. -	William Illingworth.	Engine-driver -	Wakefield - -	Face scalded -	13	
13 Dec. -	R. Cook - -	Goods-guard -	Bradford - -	Hand cut - -	18	
13 Dec. -	T. Whittle -	Goods-guard -	Bradley Fold - -	Side injured -	19	Beyond his control.
13 Dec. -	T. Spencer -	Goods-guard -	Bolton - -	Ankle sprained and shoulder injured.	1	Beyond his control.
13 Dec. -	A. Rawlinson -	Goods-guard -	Ramsbottom - -	Head injured -	18	
14 Dec. -	Joseph Smith -	Engine-driver -	Miles Platting - -	Scalded - -	13	Beyond his control.
14 Dec. -	R. Fitzgerald -	Cart-boy -	Liverpool - -	Foot run over -	5	
14 Dec. -	C. Abbott -	Goods-guard -	Wakefield - -	Ankle sprained -	5	
15 Dec. -	T. Bailey - -	Bank-rider -	Salford - -	Side injured - -	4	
18 Dec. -	S. Burke - -	Horse-driver -	Bury - - -	Ankle sprained -	1	
19 Dec. -	J. Branson -	Goods-guard -	Rishton - -	Ankle sprained -	1	
19 Dec. -	M. Wallace -	Hooker-on -	Manchester - -	Wrist injured -	7	
21 Dec. -	E. Freemantle -	Goods-shunter -	Barnsley - -	Shoulder dislocated -	1	
22 Dec. -	George Smith -	Horse-driver -	Liverpool - -	Finger crushed -	18	Beyond his control.
23 Dec. -	William Holmes -	Engine-driver -	Miles Platting - -	Ankle sprained -	13	
23 Dec. -	Samuel Hilton -	Fireman -	Brinsop Hall - -	Foot crushed -	13	
23 Dec. -	William Winter -	Shunter -	Leeds - - -	Legs broken and head injured.	8	Beyond his control.
25 Dec. -	W. Birtwell -	Engine-cleaner -	Accrington - -	Finger broken -	13	
26 Dec. -	George Grundy -	Goods-guard -	Bolton - - -	Foot run over -	18	
27 Dec. -	W. Troy - -	Goods-porter -	Thornhill - -	Shaken - -	6	Beyond his control.
29 Dec. -	R. Sprout - -	Goods-guard -	Adlington - -	Fatal - -	1	
30 Dec. -	J. Briggs - -	Engine-driver -	Accrington - -	Leg amputated -	13	Beyond his control.
	Total killed, 15; *injured*, 104.					
	Lancashire and Yorkshire and London and North-Western Joint.					
16 Dec. -	G. Shaw - -	Breaksman -	Wakefield - -	Foot crushed -	2	
	London and North-Western.					
1 Oct. -	Thomas Minton -	Shunter -	Shrewsbury - -	Fingers badly crushed	18	
3 Oct. -	Thomas Griffiths -	Breaksman -	Craven Arms - -	Hand crushed -	18	
3 Oct. -	Benjamin Fletcher	Loader - -	Camden - -	Head injured -	5	
3 Oct. -	Hiram Drake -	Guard - -	Huddersfield - -	Thumb crushed -	1	
6 Oct. -	James Hindley -	Number-taker -	Birkenhead - -	Foot crushed -	5	
7 Oct. -	Arthur Vinse -	Capstan-man -	Camden - -	Severe - -	8	
10 Oct. -	J. Taylor - -	Platelayer -	Near Gravelly Hill -	Shoulder dislocated -	5	
11 Oct. -	Thomas Hart -	Breaksman -	St. Helens - -	Leg crushed - -	18	
11 Oct. -	William Tickle -	Carriage-cleaner	Longsight - -	Crushed - -	12	
11 Oct. -	— Sharrod -	Shunter -	Nuneaton - -	Toe injured - -	1	
12 Oct. -	William Stephens -	Foreman -	Holywell - -	Fatal - -	1	
12 Oct. -	William Williams -	Platelayer -	Beaufort - -	Fatal - -	11	
12 Oct. -	James Riley -	Platelayer -	Huyton - -	Badly injured -	11	
14 Oct. -	Thomas Healey -	Porter - -	Liverpool - -	Leg injured - -	15	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876:	**London and North-Western—*cont.***					
14 Oct. -	George Cooper -	Capstan-man -	Manchester - -	Crushed - -	6	
14 Oct. -	Thomas Corcoran	Porter - -	Liverpool - -	Bruised and shaken -	1	
15 Oct. -	Thomas Bend -	Porter - -	Sutton Coldfield -	Fatal - -	5	
16 Oct. -	John Middleton -	Fireman -	Near Elmsthorpe -	Foot crushed -	11	
17 Oct. -	Philip Farley -	Porter - -	Liverpool - -	Crushed - -	1	
17 Oct. -	John Abbutt -	Carriage-washer	Birmingham - -	Knee injured -	18	
18 Oct. -	Frederick Rinson -	Fireman -	Brynmawr - -	Severely shaken -	2	
19 Oct. -	Henry Davies -	Porter - -	Liverpool - -	Head and ribs injured	8	
20 Oct. -	Arthur Filby -	Number-taker -	Willesden - -	Fatal - -	12	
21 Oct. -	G. Widders - -	Shunter -	Widnes - -	Fatal - -	4	
21 Oct. -	James Towersey -	Fireman -	Earls Court - -	Side injured - -	19	Beyond his control.
23 Oct. -	G. Skelton - -	Platelayer -	Tamworth - -	Both legs broken -	9	
23 Oct. -	James Brown -	Porter - -	Broad Street - -	Thigh injured -	6	
23 Oct. -	John Cropper -	Porter - -	Birkenhead - -	Foot crushed -	1	
24 Oct. -	Thomas Townley -	Shunter -	Wigan - -	Fatal - -	1	
24 Oct. -	Samuel Sykes -	Signal-man -	Mossley - -	Fatal - -	11	
24 Oct. -	Robert Hughes -	Porter - -	Liverpool - -	Arm dislocated -	6	
25 Oct. -	George Eldred -	Foreman -	Leamington - -	Head injured -	6	
25 Oct. -	Thomas Blake -	Cattle-guard -	Camden - -	Arm injured -	2	
25 Oct. -	Henry Jones -	Assistant foreman	Liverpool - -	Knee injured -	12	
26 Oct. -	B. Capswell -	Breaksman -	Hednesford - -	Foot injured -	5	
26 Oct. -	W. Palfreman -	Horse-driver -	Birkenhead - -	Thumb crushed -	18	
26 Oct. -	Edward Mills -	Number-taker -	Edge Hill - -	Head injured -	11	
28 Oct. -	John Maxwell -	Fireman -	Lancaster - -	Fatal - -	2	
28 Oct. -	John Smalwood -	Shunter -	Sandbach - -	Slight - -	18	
28 Oct. -	John Banks -	Porter - -	Camden - -	Chest injured -	4	
28 Oct. -	William Williams	Porter - -	Liverpool - -	Foot injured -	5	
29 Oct. -	George Hunt -	Contractor's labourer.	Primrose Hill - -	Fatal - -	8	
30 Oct. -	S. Smith - -	Fireman -	Leighton - -	Head injured -	2	
30 Oct. -	P. Shoxton - -	Porter - -	Manchester - -	Crushed - -	15	
30 Oct. -	John Edwards -	Horse-driver -	Liverpool - -	Fatal - -	1	
30 Oct. -	James Hunt -	Porter - -	Oxford - -	Crushed - -	18	
1 Nov. -	— Parrott - -	Goods-porter -	Oldham - -	Badly injured -	11	
1 Nov. -	William Oldham -	Extra-porter -	Manchester - -	Thumb crushed -	7	
3 Nov. -	Alfred Francis -	Porter - -	Leamington - -	Foot crushed -	12	
3 Nov. -	Robert Williams -	Capstan-man -	Holyhead - -	Fatal - -	11	
4 Nov. -	William Till -	Driver - -	Walsall - -	Toes cut off - -	13	
5 Nov. -	Nimrod Gardner -	Porter - -	Birkenhead - -	Face bruised -	2	
6 Nov. -	Charles Haggar -	Guard - -	Leamington - -	Eye injured - -	7	
7 Nov. -	Samuel Johnson -	Horse-driver -	Birkenhead - -	Slight - -	18	
7 Nov. -	— Higgins - -	Shunter -	Bletchley - -	Hand crushed -	1	
7 Nov. -	S. Willett - -	Station-master -	Stamford - -	Arm broken and injured internally.	15	
8 Nov. -	Charles Lees -	Horse-driver -	Liverpool - -	Hand crushed -	1	
8 Nov. -	Thomas Orme -	Porter - -	Heaton Norris - -	Arm broken - -	15	
8 Nov. -	C. J. Neville -	Inspector -	Liverpool - -	Chest injured -	11	
8 Nov. -	Thomas Farrington	Porter - -	Liverpool - -	Arm broken -	4	
9 Nov. -	John Ogle - -	Breaksman -	Bromboro' - -	Fingers crushed -	1	
10 Nov. -	John Heyes -	Signalman -	Bradshaw Leash -	Fatal - -	11	
10 Nov. -	James Caddy -	Platelayer -	Colwich - -	Fatal - -	11	
11 Nov. -	James Dallimore -	Porter - -	Northampton - -	End of finger pinched off.	18	
11 Nov. -	Michael Feeney -	Breaksman -	Crewe - - -	Fingers cut off -	18	
11 Nov. -	T. Worthington -	Yardsman -	Stafford - -	Knee injured -	11	
12 Nov. -	James Peters -	Platelayer -	Ditton - - -	Severe - -	2	
13 Nov. -	Samuel Daws -	Fireman -	Wednesbury - -	Severe - -	18	
13 Nov. -	Arthur Hightcock -	Fireman -	Stockport - -	Foot crushed -	1	
15 Nov. -	George Elliott -	Foreman -	Stafford - -	Fatal - -	1	
15 Nov. -	Thomas Hughes -	Breaksman -	Warrington - -	Crushed - -	4	
15 Nov. -	W. Robinson -	Engine-driver -	Market Harboro' -	Ear injured - -	19	Beyond his control.
15 Nov. -	W. J. Martin -	Porter - -	Broad Street - -	Hip bruised and head cut.	19	
17 Nov. -	F. Keenes - -	Porter - -	Broad Street - -	Crushed - -	6	
18 Nov. -	J. Bloodworth -	Breaksman -	Oxford - -	Bruised - -	19	
18 Nov. -	F. Helyer - -	Porter - -	Broad Street - -	Leg bruised - -	8	
19 Nov. -	William Phipps -	Breaksman -	Pelsall - -	Fatal - -	18	
19 Nov. -	Alfred Cope -	Pilot-shunter -	Manchester - -	Crushed - -	1	
20 Nov. -	Thomas Holmes -	Porter - -	Liverpool - -	Thumb crushed -	8	
20 Nov. -	W. Rhead - -	Engine-driver -	Hereford - -	Face badly cut -	2	
21 Nov. -	G. Mills - -	Fireman -	Dudley Port - -	Head and arms injured.	13	
21 Nov. -	— Rivett - -	Signal department	Rugby - -	Crushed - -	1	
21 Nov. -	Edward Davidson -	Sheeter - -	Liverpool - -	Back injured -	6	
21 Nov. -	— Brunfield -	Breaksman -	Spon Lane - -	Wrist injured -	18	
22 Nov. -	Thos. Brocklehurst	Porter - -	Liverpool - -	Knee injured -	18	
22 Nov. -	Martin Grogan -	Porter - -	Manchester - -	End of finger cut off	1	
23 Nov. -	Thomas Kirkwood	Porter - -	Liverpool - -	Crushed - -	7	
23 Nov. -	Edward James -	Foremanplatelayer	Tredegar - -	Fatal - -	9	
23 Nov. -	Andrew Gilmore -	Breaksman -	New Mills - -	Fatal - -	11	
23 Nov. -	George Spooner -	Signalman -	Willesden - -	Fatal - -	1	
23 Nov. -	William Carruthers	Platelayer -	Near Brigham - -	Fatal - -	5	
23 Nov. -	Samuel Bunting -	Curve-man -	Cromford Incline -	Head and shoulders injured.	11	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876 :	**London and North-Western—*cont.***					
23 Nov. -	G. Phillips -	Engine-fitter -	Edge Hill - -	Crushed - -	13	
24 Nov. -	Thomas Whitfield	Porter - -	Liverpool - -	Foot crushed -	18	
24 Nov. -	Frank Milford -	Loader - -	Haydon Square -	Knee injured -	5	
25 Nov. -	Thomas Blomesley	Guard - -	Patricroft - -	Shoulder dislocated -	5	
27 Nov. -	Thomas Hall -	Porter - -	Liverpool - -	Leg bruised - -	8	
28 Nov. -	Walter Woods -	Fireman -	Great Bridge - -	Arm severely injured.	13	
30 Nov. -	Benjamin Feltus -	Acting breaksman	Liverpool - -	Chest crushed -	4	
30 Nov. -	Samuel Lord -	Labourer -	Bollin Bridge - -	Crushed - -	9	Beyond his control.
1 Dec. -	A. G. Merreden -	Carriage cleaner	Euston - -	Eye cut and arm bruised.	2	
1 Dec. -	— Wycherley -	Breaksman -	Crewe - -	Badly injured -	1	
1 Dec. -	Peter McCabe -	Porter - -	Birkenhead - -	Shaken - -	18	
1 Dec. -	James Shaw -	Engine-driver -	Ravenhead Junction -	Back injured -	1	
4 Dec. -	George Milner -	Breaksman -	Birkenhead - -	Hip injured - -	18	
4 Dec. -	John Poole -	Platelayer -	Near Preston - -	Head injured -	17	
5 Dec. -	James Greenaway	Checker -	Haydon Square -	Hand crushed -	8	
5 Dec. -	Edwin Randall -	Labourer -	Old Junction - -	Fatal - -	11	
5 Dec. -	J. Ayre - -	Fireman -	Blisworth - -	Foot crushed -	1	
6 Dec. -	John Smith -	Porter - -	Birkenhead - -	Knee injured -	18	
7 Dec. -	William Woods -	Porter - -	Liverpool - -	Arm fractured -	1	
7 Dec. -	P. Seery - -	Caller-off -	Camden - -	Leg injured - -	6	
7 Dec. -	Edward Cole -	Porter - -	Camden - -	Loins bruised -	11	
7 Dec. -	G. E. Roberts -	Fireman -	Round House Junction	Fatal - -	7	
7 Dec. -	D. Williams -	Extra labourer -	Swansea - -	Heel badly cut -	1	
8 Dec. -	Edward James -	Platelayer -	Tyldesley - -	Badly injured -	11	
9 Dec. -	James Mitchell -	Breaksman -	Near Batley - -	Slight - -	11	
9 Dec. -	Thomas Hindley -	Horse-driver -	Manchester - -	Arm and leg broken	19	
9 Dec. -	Samuel Foster -	Shunter -	St. Helens - -	Crushed - -	12	
10 Dec. -	James Dakin -	Fireman -	Guide Bridge - -	Face and body injured	2	
11 Dec. -	D. K. Ross -	Porter - -	Liverpool - -	Back and shoulders injured.	5	
11 Dec. -	— Allen - -	Goods-porter -	Banbury - -	Badly injured -	4	
11 Dec. -	J. Chamber -	Capstan-man -	Camden - -	Leg injured - -	8	
12 Dec. -	John Wright -	Breaksman -	Rock Ferry - -	Knee crushed -	18	
13 Dec. -	G. Durham -	Driver - -	Liverpool - -	Foot badly crushed -	1	
13 Dec. -	G. Clarke -	Fireman -	Nuneaton - -	Eye cut - -	3	
13 Dec. -	John Evans -	Shunter -	Chalk Farm - -	Head badly cut -	5	
14 Dec. -	A. Clements -	Porter - -	Ordsall Lane - -	Fatal - -	5	
15 Dec. -	John Holmes -	Breaksman -	Atherton - -	Slight - -	1	
15 Dec. -	G. Seabrook -	Labourer -	Cheddington - -	Leg severely injured	9	Beyond his control.
15 Dec. -	John McCue -	Shunter -	Birmingham - -	Fatal - -	1	
16 Dec. -	John Hollogan -	Shunter -	Birkenhead - -	Severely shaken -	2	Beyond his control.
19 Dec. -	James Wotton -	Porter - -	Liverpool - -	Slight - -	6	
20 Dec. -	— Tuncliffe -	Porter - -	Rugby - -	Crushed - -	18	
20 Dec. -	John Smith -	Shunter -	Birmingham - -	Arm crushed -	18	
20 Dec. -	R. Reed - -	Capstan-man -	Broad Street - -	Eye injured -	8	
20 Dec. -	J. Ruller -	Engine-driver -	Broad Street - -	Slight - -	11	
21 Dec. -	— Warner -	Breaksman -	Willesden - -	Fingers crushed -	18	
22 Dec. -	W. Jones -	Waggonexaminer	Edge Hill - -	Fatal - -	11	
23 Dec. -	Richard Holman -	Gland packer -	Monument Lane -	Badly injured -	11	
23 Dec. -	William Davies -	Fireman -	Near Llanduno Junction	Badly injured -	11	
23 Dec. -	Thomas Morsley -	Shipper -	Haydon Square -	Hand crushed -	1	
24 Dec. -	T. Gaskell -	Engine-driver -	Rugby - - -	Back injured -	16	
26 Dec. -	John Gee -	Horse-driver -	Manchester - -	Fingers crushed -	18	
28 Dec. -	Thomas Newell -	Platelayer -	Darlaston Green -	Fatal - -	11	
28 Dec. -	John Barker -	Foreman-shunter	Carlisle - -	Leg fractured -	18	
29 Dec. -	Edward Trigger -	Porter - -	Poplar - -	Arm crushed -	6	
29 Dec. -	W. Williams -	Engine-cleaner -	Carnarvon - -	Crushed - -	4	
30 Dec. -	John Jones -	Labourer -	Mold Junction -	Fatal - -	11	
	Total killed, 26 ; *injured*, 123.					
	London and North-Western and Great Western Joint.					
3 Oct. -	T. Griffiths -	Porter - -	Craven Arms - -	Hand crushed -	18	
14 Oct. -	G. Evans - -	Porter - -	Ludlow - -	Finger broken -	8	
28 Oct. -	H. James -	Porter - -	Leominster - -	Body squeezed -	18	
1 Nov. -	E. Price - -	Platelayer -	Shrewsbury - -	Fatal - -	9	
16 Dec. -	William Davies -	Porter - -	Chester - -	Fingers crushed -	18	
22 Dec. -	E. Penlington -	Porter - -	Bramborough - -	Thumb crushed -	12	
30 Dec. -	W. Drinkwater -	Porter - -	Chester - -	Ankle grazed -	15	
	Total killed, 1 ; *injured*, 6.					
	London and South-Western.					
5 Oct. -	Charles Grant -	Porter - -	Bishopstoke - -	Fatal - -	1	
9 Oct. -	Thomas Tarrett -	Porter - -	Waterloo Station - -	Head cut and body bruised.	11	
25 Oct. -	Osmond Wigg -	Porter - -	Walton - - -	Fatal - -	11	
8 Nov. -	B. Wellman -	Labourer -	Windsor - -	Fatal - -	1	
15 Nov. -	Thomas Farley -	Porter - -	Twickenham - -	Arm broken -	15	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876:	**London and South-western—*cont.***					
17 Nov.	J. G. Wyeth	Porter	Nine Elms	Fatal	1	
17 Nov.	T. Crocker	Breaksman	Guildford	Fatal	1	
22 Nov.	W. Cose	Fireman	Woking	Leg broken	2	
4 Dec.	George Warren	Shunter	Nine Elms	Severe	17	
5 Dec.	John Ginn	Foreman	Northam	Fatal	11	
17 Dec.	Sam. Sparshott	Guard	Farnboro'	Fatal	15	
26 Dec.	W. Hayes	Shunter	Bishopstoke	Hand cut off	1	
	Total killed, 7; *injured*, 5.					
	London, Brighton, and South Coast.					
1 Oct.	Edgar Cheal	Signalman	Hastings	Dislocated shoulder	19	
4 Oct.	George Howick	Porter	Havant	Fatal	5	
7 Oct.	E. French	Carman	Croydon	Hand crushed	6	
7 Oct.	G. Capel	Fireman	Caterham Junction	Severe	2	
9 Oct.	Robert Seagrave	Temporary porter	Brighton	Fatal	6	
17 Oct.	J. T. Wells	Ticket-collector	East Croydon	Sprained wrist and cut face.	5	
18 Oct.	William Beacroft	Horse-driver	Willow Walk	Foot crushed	1	
23 Oct.	John Heasman	Fireman	Red Hill	Severe	3	
24 Oct.	James Conway	Goods-guard	Gipsy Hill	Bruised	4	
26 Oct.	Charles Lucas	Lamp-lad	Victoria Station	Crushed feet	1	
10 Nov.	Thomas Harland	Head shunter	Three Bridges	Severe	1	Beyond his control.
12 Nov.	H. Faint	Goods-guard	Battersea	Severe scalp wound	1	
13 Nov.	G. Roberts	Signal-porter	Billinghurst	Severe	11	
21 Nov.	S. Tribe	Fireman	Tulse Hill	Leg broken	2	
21 Nov.	Jesse Smith	Porter	North Dulwich	Severe	10	
22 Nov.	James Towner	Signalman	Shoreham	Arm injured	19	
22 Nov.	Henry Humphrey	Porter	Tulse Hill	Fatal	11	
22 Nov.	William Barwood	Conductor of a Pullman Car.	East Croydon	Fatal	5	
23 Nov.	Joseph Wakefield	Head porter	Deptford Road	Severe	10	
23 Nov.	W. H. Wilson	Scalesman	Willow Walk	Hand lacerated	1	
6 Dec.	A. Anscombe	Goods-foreman	Lewes	Fatal	19	
15 Dec.	T. Prendergast	Porter	Hastings	Shoulder crushed	1	
17 Dec.	Jasper Wigmore	Shunter	Norwood	Fatal	18	
19 Dec.	J. W. Buchanan	Fitter	Ford Junction	Fatal	11	
19 Dec.	Henry Daniels	Porter	Burgess Hill	Crushed foot	1	
22 Dec.	W. Spooner	Fireman	Grosvenor Road	Slight	2	
23 Dec.	William Millham	Porter	Haywards Heath	Dislocated spine	11	
26 Dec.	William Payne	Station-master	Withyham	Arm broken	1	Beyond his control.
26 Dec.	J. Wright	Shunter	Willow Walk	Severe	1	
27 Dec.	C. Ship G. Wimshurst	Driver Fireman	Deptford Road	Scalded	13	Beyond their control.
	Total killed, 7; *injured*, 24.					
	London, Chatham, and Dover.					
14 Oct.	Henry Cogger	Platelayer	Cobham	Fatal	9	
23 Oct.	W. Handley	Super. porter	Dover	Fatal	12	
24 Oct.	R. Spicer	Goods-guard	Bromley	Severe	4	
6 Nov.	Thomas Healy	Labourer	Ludgate Hill Bridge	Slight	11	
7 Nov.	Henry Smith	Labourer	Clapham Road	Severe	11	
21 Nov.	— Jones	Shunter	Maidstone	Severe	1	
25 Nov.	J. Crossley	Fireman	Faversham	Scalp wound	3	
9 Dec.	— Shaw	Porter	Loughboro' Junction	Body bruised, and two toes broken.	11	
29 Dec.	Henry Fairbrass	Porter	Canterbury	Fatal	1	
	Total killed 3; *injured*, 6.					
	Manchester, Sheffield, and Lincolnshire.					
4 Oct.	T. Kenyon	Ballast-guard	Wombwell	Fatal	11	
6 Oct.	J. Stringer	Checker	Staley Bridge	Arm broken	7	
17 Oct.	H. Harlow	Foreman-shunter	Ardwick	Head cut	11	
17 Oct.	C. Hunt	Goods-guard	Kiveton Park	Fatal	5	
17 Oct.	H. Meakin	Shunter	Ardwick	Eye cut	1	
20 Oct.	George Dawson	Travelling porter	Wombwell	Hand injured	7	
21 Oct.	William Lythe	Shunter	Grimsby	Crushed	4	
25 Oct.	C. Geeson	Goods-guard	Lundhill	Finger crushed	7	
30 Oct.	M. Donlon	Contractor's servant.	Hexthorpe	Fatal	9	
3 Nov.	W. Porter	Shunter	Broughton Lane	Foot injured	5	
4 Nov.	C. Allen	Shunter	Mexboro'	Foot injured	7	
7 Nov.	G. S. Haywood	Travelling porter	Barnsley	Hand injured	7	
9 Nov.	Thomas Murphy	Labourer	Guide Bridge	Fatal	11	
11 Nov.	E. Carr	Driver	Silkstone Fall	Head, side, and foot injured.	13	
16 Nov.	A. Rodgers	Shunter	Barnsley	Knee crushed	18	
18 Nov.	J. Hadfield	Fireman	Grimsby	Arm broken	13	
4 Dec.	G. Blessed	Shunter	Rotherham	Foot crushed	18	
5 Dec.	J. Broadbent	Shunter	Guide Bridge	Shaken	1	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876:	**Manchester, Sheffield, and Lincolnshire—*cont.***					
8 Dec. -	B. Allen - -	Passenger-porter	Grimsby Docks -	Head and foot injured	11	
11 Dec. -	G. Brown -	Shunter -	Ardwick - -	Knee injured -	18	
13 Dec. -	William Inns -	Platelayer -	Meadow Hall - -	Fatal - -	9	Fog signalling.
18 Dec. -	William English -	Fireman -	Mexbro' - -	Arm run over -	10	
20 Dec. -	H. Hawkesley -	Grease-lad -	Sheffield - -	Arm crushed -	11	
26 Dec. -	Thomas Ward -	Goods-guard -	Grimsby Docks -	Fatal - -	11	
28 Dec. -	J. Flanagan -	Shunter -	Broughton Lane -	Forehead cut -	2	
31 Dec. -	G. Smith - -	Goods-guard -	Godley - -	Foot run over -	1	
	Total killed, 6 ; *injured*, 20.					
	Manchester, South Junction, and Altrincham.					
1 Nov. -	William Fiddler -	Labourer -	Cornbrook - -	Fatal - -	9	
	Metropolitan and St. John's Wood.					
2 Dec. -	Walter Fowles -	Pilotman -	St. John's Wood Road	Thumb injured and head bruised.	15	
	Metropolitan District.					
3 Dec. -	— Clements -	Breaksman -	Bishopsgate - -	Head cut - -	19	Beyond his control.
	Midland.					
4 Oct. -	E. Whetton -	Shunter -	Toton - - -	Foot crushed -	1	
4 Oct. -	W. Pearce -	Waggon-greaser	Sheffield - -	Foot crushed -	5	
5 Oct. -	C. Warnes -	Platelayer -	Rise Hill - -	Fatal - -	9	
5 Oct. -	W. Twichell -	Porter - -	Luffenham - -	Fatal - -	7	
5 Oct. -	H. Lane - -	Horse-driver -	Sheffield - -	Leg run over -	5	
7 Oct. -	J. Knapp - -	Guard - -	Near Haslan - -	Fatal - -	11	
7 Oct. -	J. Blundell -	Pointsman -	Burton - -	Fatal - -	14	
7 Oct. -	— Dobson -	Fireman -	Lincoln - -	Fatal - -	15	
9 Oct. -	W. Herod -	Shunter -	Toton - - -	Thigh crushed -	18	
9 Oct. -	J. Turner -	Contractor's servant.	Kettering - -	Fatal - -	11	
10 Oct. -	— Brewer -	Guard - -	Desford - -	Foot crushed -	1	
11 Oct. -	M. McGreedy -	Contractor's servant.	Derby - - -	Fatal - -	19	
11 Oct. -	J. Greening -	Goods-porter -	Bagworth - -	Collar-bone fractured	5	
11 Oct. -	E. Linnett -	Ballast-guard -	Oakley Junction -	Fatal - -	1	
19 Oct. -	E. Smith - -	Boiler-washer -	Burton - -	Internal - -	10	
20 Oct. -	H. Day - -	Goods-porter -	Nottingham - -	Fatal - -	12	
20 Oct. -	F. Helt - -	Shunter -	Nottingham - -	Arm crushed -	1	
24 Oct. -	— Anakin -	Porter - -	Leeds - - -	Crushed - -	6	
24 Oct. -	H. Clark - -	Greaser -	Manchester - -	Arms run over -	11	
27 Oct. -	C. Smith - -	Guard - -	Toton - - -	Leg run over -	18	
28 Oct. -	H. Hand - -	Porter - -	Sheffield - -	Thigh broken -	4	
31 Oct. -	— Widdowson -	Gateman -	Skipton - -	Shaken - -	14	
31 Oct. -	R. Shire - -	Shunter -	Chaddesden - -	Leg run over -	5	
1 Nov. -	J. Davis - -	Horse-driver -	Gloucester - -	Foot run over -	5	
7 Nov. -	— Clegg - -	Porter - -	Bradford - -	Big toe run over -	6	
10 Nov. -	C. Willsher -	Shunter -	Kettering - -	Heel run over -	7	
11 Nov. -	T. Mills - -	Telegraph messenger.	St. Pancras - -	Arm and leg run over	2	
15 Nov. -	G. Crowder -	Engine-driver -	Attercliffe Road -	Shaken - -	2	
15 Nov. -	T. Sansum -	Fireman -	Kingsbury - -	Fatal - -	3	
17 Nov. -	— Crupps -	Goods-guard -	Toton - - -	Fatal - -	1	
22 Nov. -	A. Kirby - -	Goods-guard -	Staveley - -	Crushed - -	18	
23 Nov. -	G. Laws - -	Porter - -	Hunslet - -	Leg bruised - -	19	
24 Nov. -	— Timbrell -	Guard - -	Birmingham - -	Foot bruised -	5	
24 Nov. -	— Parsons -	Foreman -	Birmingham - -	Foot crushed -	5	
25 Nov. -	C. Field - -	Goods-guard -	Toton - - -	Crushed - -	18	
27 Nov. -	W. A. Brooks -	Goods-guard -	Kettering - -	Fatal - -	18	
28 Nov. -	J. Burrage -	Goods-guard -	Chesterfield - -	Crushed - -	18	
30 Nov.	— Peabody - / — Garth - -	Way and works labourers -	Rawmarsh - -	Fatal - - / Leg fractured -	9	
1 Dec. -	C. Newbold -	Porter - -	Derby - - -	Crushed - -	15	
4 Dec. -	— Edmonds -	Horse-driver -	Keighley - -	Crushed - -	18	
6 Dec. -	S. Hooper -	Shunter -	St. Pancras - -	Shaken and leg cut -	11	
6 Dec. -	D. Wright -	Goods-guard -	Stamford - -	Crushed - -	18	
15 Dec. -	D. Aldershaw -	Platelayer -	Stanton Gate - -	Shaken - -	9	
16 Dec. -	R. Smith - -	Labourer -	South Tottenham -	Face cut and three ribs broken.	6	
18 Dec. -	T. Smith - -	Platelayer -	Derby - - -	Fatal - -	11	
19 Dec. -	G. Garner -	Horse-driver -	Chaddesden - -	Leg run over -	19	Beyond his control.
19 Dec. -	H. Eatwell -	Shunter -	Kettering - -	Arm broken -	18	
20 Dec. -	J. Walkerdine -	Carriage-lifter -	Chaddesden - -	Foot run over -	10	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remark
1876:	**Midland—*cont.***					
20 Dec.	J. Allcock	Goods-guard	Redditch	Crushed	1	
20 Dec.	— Shaw	Engine-driver	Rowsley	Ankle broken	2	
22 Dec.	W. Hardacre	Platelayer	Keighley	Fatal	11	
23 Dec.	— Foster	Lamp-man	Wellingborough	Shaken and feet crushed.	4	
26 Dec.	W. Griffin	Horse-driver	Chesterfield	Leg run over	1	
29 Dec.	F. Parker	Scotcher	St. Pancras	Fatal	18	
29 Dec.	— Clutterbuck	Engine-driver	Gloucester	Arm broken	13	
30 Dec.	— Clarke	Horse-driver	Toton	Arm crushed	18	
	Total killed, 16; *injured*, 41.					
	Monmouthshire.					
26 Oct.	Clement Richards	Breaksman	Near Nantyglo	Leg badly injured	2	
18 Nov.	Thomas Jones	Guard	Newport	Foot badly injured	5	
7 Dec.	Edward Hart	Goods-guard	Cwmbran	Severe	1	
14 Dec.	John Waters	Breaksman	Talywain	Body badly bruised	1	
	Total injured, 4.					
	North-Eastern.					
3 Oct.	John Boys	Platelayer	Tyne Docks	Leg injured	9	
4 Oct.	J. Humbles	Shunter	Hull	Side injured	1	
4 Oct.	James Thompson	Mineral-guard	Darlington	Foot injured	18	
5 Oct.	George Topling	Goods-clerk	Sunderland	Ankle injured	5	
6 Oct.	A. Bremnar	Porter	Newcastle	Arm injured	9	
6 Oct.	Thomas Elger	Shunter	Near Leeds	Fingers injured	18	
7 Oct.	J. Wardle	Pilot-guard	Carlisle	Knee injured	7	
10 Oct.	Robert Jackson	Shunter	Stockton	Fatal	1	Beyond his control.
10 Oct.	T. Myton	Goods-porter	York	Shoulder hurt	7	
12 Oct.	Thomas Jobling	Labourer	Hartlepool	Thumb injured	8	
18 Oct.	Thomas Turner	Porter	York	Body crushed	18	
23 Oct.	Henry Wilson	Mineral-guard	Blyth	Hand crushed	1	
26 Oct.	C. Brown	Ticket-collector	York	Head and back injured	19	
26 Oct.	— Wellerby	Contractor's servant.	Sunderland	Foot injured	9	
26 Oct.	L. Appleby	Mineral-guard	Silksworth	Crushed	18	Beyond his control.
27 Oct.	George Rudd	Chocker	Newcastle	Hand crushed	7	
28 Oct.	Edward Taylor	Number-taker	Spennymoor	Fatal	11	
1 Nov.	T. Anderson	Goods-porter	Starbeck	Body injured	17	
2 Nov.	T. Harland	Shunting-guard	West Hartlepool	Ankle injured		
3 Nov.	Henry Renton	Guard	Sunderland	Head injured	1	
3 Nov.	Robert Wright, — Boreham	Ganger, Police constable	Darlington	Fatal, Severe	11	
4 Nov.	John Davidson	Shunter	Blaydon	Hand and knee injured.	5	
4 Nov.	James Simpson	Pilot-guard	Darlington	Breast hurt	1	
6 Nov.	W. Jermy	Shunting-guard	Hartlepool	Crushed	1	
7 Nov.	Robert Knox	Mineral-guard	Barnard Castle	Head injured	3	
9 Nov.	F. Hawksworth	Capstan-boy	Hull	Fingers crushed	8	
13 Nov.	T. Marshall	Fireman	Percy Main	Fatal	18	
13 Nov.	T. Coope	Fireman	Leeds	Body injured	2	
14 Nov.	George Nicholson	Goods-guard	Near Stockton	Arm broken	18	
14 Nov.	George Frockins	Casual porter	Hull	Crushed	15	
16 Nov.	Robert Stockton	Fireman	West Hartlepool	Jaw injured	7	
17 Nov.	Alexander Miller	Engine-driver	Heaton	Shaken	19	
18 Nov.	Mark Strother	Goods-guard	Bridlington	Fatal	1	
18 Nov.	J. Lavery	Pilot-guard	Newcastle	Foot crushed	1	
20 Nov.	F. Johnson	Fireman	Morpeth	Leg injured	5	
21 Nov.	George Hunter	Fireman	Stella Gill	Hand injured	18	
22 Nov.	William Riles	Platelayer	Guisboro' Junction	Internal	9	
23 Nov.	Thomas Morriss	Number-taker	Hull	Head injured	9	
24 Nov.	George Towers	Engine-driver	West Hartlepool	Shaken	2	
25 Nov.	Walter Binks	Porter	Hull	Crushed	6	
25 Nov.	John Simpson	Porter	Selby	Finger crushed	18	
27 Nov.	W. Vollans	Platelayer	Temple Hirst	Hand injured	2	
28 Nov.	John Dunn	Mineral-guard	Darlington	Head and arm injured	11	
28 Nov.	George Hedley	Number-taker	Sunderland	Foot injured	9	
30 Nov.	George Webster	Carriageinspector	Scarboro'	Foot crushed	19	
30 Nov.	J. Archbold	Shunter	Ferryhill	Leg injured	1	
30 Nov.	A. Rummage	Chocker	Sunderland	Arm crushed	12	
2 Dec.	Thomas Lofthouse	Waggon-painter	York	Body crushed	9	
2 Dec.	H. Raven	Horseman	Hull	Foot injured	1	
4 Dec.	William Nicholson	Teemer	West Hartlepool	Side injured	7	
6 Dec.	George Atkinson	Goods-guard	Newcastle	Head injured	2	
7 Dec.	Robert Cummings	Shunting-guard	Tyne Dock	Leg injured	7	
7 Dec.	Joseph Craggs	Fireman	Tyne Dock	Knee injured	18	
7 Dec.	H. W. Groves	Booking-clerk	Horsforth	Leg injured	7	
8 Dec.	J. Harker	Goods-foreman	Wilmington	Fatal	9	
9 Dec.	A. Wright	Goods-guard	Heaton Junction	Back injured	11	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876 :	**North-Eastern—*cont.***					
11 Dec. -	George Richardson	Goods-guard -	North Stockton -	Foot crushed -	18	
13 Dec. -	A. G. Brown -	Mineral-guard -	Widdrington -	Slight -	1	
15 Dec. -	J. Hall -	Horseman -	Hull -	Hand injured -	18	
15 Dec. -	William Usher -	Horseman -	Hull -	Fatal -	1	
16 Dec. -	William Smith -	Fireman -	Barnard Castle -	Foot crushed -	2	
18 Dec. -	C. Dickinson -	Goods-guard -	Tyne Dock -	Knee injured -	2	
18 Dec. -	James Purvis -	Engine-driver -	Tweedmouth -	Shaken -	1	
20 Dec. -	John Andrews -	Teemer -	Tyne Dock -	Fatal -	1	
25 Dec. -	J. Forster -	Porter -	Newcastle -	Foot injured -	5	
27 Dec. -	T. Hamilton -	Shunter -	Newcastle -	Hand injured -	7	
28 Dec. -	A. Patterson -	Porter -	Newcastle -	Slight -	6	
	Total killed, 8 ; *injured*, 60.					
	North London.					
18 Oct. -	William Turner -	Joiner -	Dalston -	Head cut -	11	
28 Oct. -	Alfred Hume -	Engine-cleaner -	Devon's Road Bridge -	Fatal -	11	
8 Nov. -	Charles Murgote -	Contractor's servant.	Bow -	Fatal -	11	
	Total killed, 2 ; *injured*, 1.					
	North Staffordshire.					
12 Oct.	George Aimson -	Platelayers -	Near Alsager Station -	Fatal -	10	
	William Sigley -					
23 Dec. -	William Harris -	Foreman-shunter	Froghall -	Hips and abdomen injured.	1	
	Total killed, 2 ; *injured*, 1.					
	North Union.					
2 Oct. -	Edward Bailey -	Goods-porter -	Preston -	Foot contused -	17	
	Rhymney.					
11 Dec. -	William Bartlett -	Breaksman -	Ffaldcaiach -	Fatal -	2	
	Sheffield and Midland Committee.					
31 Oct. -	J. Fisher -	Goods-porter -	Marple -	Leg injured -	17	Beyond his control.
29 Nov. -	J. Burgess -	Station-master -	Bredbury -	Arm broken -	5	
17 Dec. -	T. Stubbs -	Porter -	Hayfield -	Toes run over -	15	
	Total injured, 3.					
	Somerset and Dorset.					
17 Nov. -	Frederick Courtenay	Porter -	Temple Combe -	Crushed -	4	
19 Nov. -	Frederick Atyeo -	Breaksman -	Bath -	Fatal -	18	
20 Nov. -	Jesse Board -	Fireman -	Bailey Gate -	Severe -	13	Beyond his control.
21 Nov. -	Andrew Thomas -	Engine-driver -	Radstock -	Severe -	4	
24 Dec. -	A. Andrews -	Platelayer -	Single Hill -	Fatal -	11	
	Total killed, 2 ; *injured*, 3.					
	South-Eastern.					
9 Oct. -	— Wilkes -	Yard-foreman -	Charing Cross -	Arm and foot crushed	11	Beyond his control.
13 Nov. -	George Browse -	Porter -	St. John's -	Fatal -	12	
	Total killed, 1 ; *injured*, 1.					

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

SCOTLAND.

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876:	**Caledonian.**					
3 Oct.	D. McGilvray	Porter	Glasgow	Leg bruised	17	
4 Oct.	Alexander Lawrie	Surface-man	Mid Calder	Leg fractured	16	
14 Oct.	John Smith	Breaksman	Wishaw	Several ribs broken	18	
17 Oct.	Richard Musgrove	Platelayer	Near Rockliffe	Fatal	9	
20 Oct.	James Paris	Goods-porter	Dundee West	Leg fractured	8	
25 Oct.	Peter Doig	Engine-driver	Clocksbriggs	Breast injured	13	
26 Oct.	Charles Fairbairn	Breaksman	Bellside	Fatal	18	
28 Oct.	John Reid	Yardsman	Perth, South	Body crushed	18	
8 Nov.	John Wilson	Breaksman	Spiersbridge	Fatal	1	
8 Nov.	James Sweeney	Platelayer	Hamilton	Head cut	5	
11 Nov.	Adam Lindsay	Engine-driver	Leith	Arm crushed	12	
13 Nov.	John Robertson	Yardsman	Glasgow	Ankle sprained	5	
14 Nov.	John Thomson	Breaksman	Clydesdale	Fatal	3	
17 Nov.	William Reid	Porter	Edinburgh	Head cut	4	
22 Nov.	James Sweeny	Labourer	Auchergray	Ankle crushed	9	
23 Nov.	Charles Sweeney	Labourer	Whifflet	Fatal	9	
25 Nov.	Thomas Parkinson	Labourer	Near Garriongill	Fatal	9	
25 Nov.	Neil Morrison	Surface-man	Clarkston	Slight	5	
28 Nov.	Michael Harkins Patrick Thomas	Labourers	Near Garnkirk	Fatal	9	
29 Nov.	John Hart	Yardsman	Granton	Knee squeezed	18	
4 Dec.	John Dowers	Yardsman	Perth, South	Leg crushed	18	
6 Dec.	James Valentine	Breaksman	Glasgow	Finger broken	7	
8 Dec.	David Cran	Breaksman	Craigo	Hand injured	18	
9 Dec.	Robert Armstrong	Breaksman	Larbert	Head cut	1	
15 Dec.	James Smith	Yardsman	Glasgow	Hand injured	1	
18 Dec.	Alexander Fraser	Yardsman	Motherwell	Foot bruised	4	
23 Dec.	Alexander Gellatly	Breaksman	Panmure	Fatal	18	
23 Dec.	Michael Barron	Platelayer	Ross, North Junction	Fatal	9	
26 Dec.	John Maloney Thomas Golden	Platelayers	Curriehill	Fatal	11	
30 Dec.	John Kennedy	Porter	Alyth Junction	Severe	18	
	Total killed, 12; *injured*, 20.					
	Dundee East Joint Station.					
28 Oct.	John Scott	Contractor's horseman.	Station	Fatal	1	
4 Nov.	James Thompson	Contractor's carter.	Station	Leg broken	19	
	Total killed, 1; *injured*, 1.					
	Glasgow and Paisley Joint.					
22 Nov.	Patrick McGlinn	Surface-man	Near Paisley	Severe	9	
	Glasgow and South-Western.					
6 Oct.	Samuel Tannahill	Goods-guard	Troon	Crushed	18	
12 Oct.	Isaac Martin	Surface-man	Dennistoun	Slight	9	
25 Oct.	David Aitkenhead	Second guard	Kilwinning	Crushed	18	
26 Oct.	Duncan McMaster	Porter	Greenock	Fatal	11	
1 Nov.	David Johnstone	Surface-man	Auchinleck	Leg broken and otherwise bruised.	9	
7 Nov.	G. Houston	Breaksman	Gretna Junction	Face cut	3	
14 Nov.	John Douglas	Guard	Paisley	Fatal	18	
20 Nov.	John Sharpe	Guard	Hurlford	Side severely crushed	5	
28 Nov.	Peter Spence	Engine-driver	Near Penilee	Fatal	11	
1 Dec.	Robert McCafferty	Surface-man	Johnstone	Severe	9	
18 Dec.	Peter Kean	Guard	Dirrans Bridge	Elbow smashed	18	
	Total killed, 3; *injured*, 8.					
	Glasgow, Barrhead, and Kilmarnock Joint.					
17 Oct.	James McCulloch	Ticket-collector	Barrhead	Leg broken	5	
	Great North of Scotland.					
7 Oct.	Dixon Beaton	Signalman	Elgin	Slight	11	
21 Dec.	James Reid	Porter	Grantown	Chest injured	1	
	Total injured, 2.					
	Highland.					
13 Nov.	William Jenner	Yardsman	Inverness	Fatal	1	

Part III.—Return of Accidents to Servants employed on the Railway, &c.—*cont.*

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876: North British.						
29 Sept.	John McFerran	Porter	Dalreoch	Hand crushed	7	
2 Oct.	Thomas Hutchison	Goods-guard	Hawick	Severe	15	
4 Oct.	James Cunningham	Porter	Port Dundas	Foot crushed	1	
5 Oct.	John Semple	Porter	South Leith	Leg amputated	2	
5 Oct.	Daniel Tweedle	Porter	Glasgow	Body injured	15	
7 Oct.	William Nicol	Goods-guard	Grahamston	Foot crushed	5	
7 Oct.	Robert Baillie	Engine-driver	Lenzie	Severe	2	
7 Oct.	John Harper	Porter	Chollerford	Hand crushed	1	
15 Oct.	John Calder	Surface-man	Portobello	Fatal	10	
16 Oct.	Francis Docherty	Goods-guard	Galashiels	Thumb amputated	7	
16 Oct.	Robert Hutchison	Fireman	Cowlairs	Arm bruised	13	
18 Oct.	John Brisland	Goods-guard	Balloch	Hand crushed	18	
21 Oct.	James Harvey	Guard	Bearsden	Head cut and leg bruised.	15	
1 Nov.	John Kelly Myles McGurty	Surface-men	Joppa	Fatal Severe	9	
6 Nov.	David Colville	Fireman	Galashiels	Head cut	18	
9 Nov.	James Shaw	Goods-guard	Glasgow	Foot bruised	1	
16 Nov.	Thomas Blair	Goods-guard	Peebles	Leg amputated	18	
18 Nov.	Thomas Lindores	Fireman	Westcraigs	Head cut	2	
23 Nov.	James Murphy	Surface-man	Maryhill	Fatal	11	
25 Nov.	Peter Grieve	Goods-guard	Kirkliston	Fatal	1	
25 Nov.	M. F. Grey	Goods-guard	Reston	Chest hurt	1	
28 Nov.	John Cuthbertson	Waggon inspector	Glasgow	Body crushed	12	
30 Nov.	William Mason	Goods-guard	Portobello	Fatal	11	
4 Dec.	Robert Boyd	Goods-guard	Walkerburn	Ankle crushed	1	
4 Dec.	John White	Marshall-man	Glasgow	Fatal	4	
5 Dec.	John Edgar	Surface-man	Longtown	Fatal	9	
8 Dec.	James McLaren	Fireman	Dalmure	Slight	2	
9 Dec.	William Murnen	Goods-guard	Rawyards	Two fingers amputated	18	
11 Dec.	Alexander Maxwell	Pilot-guard	Glasgow	Internally injured	2	
13 Dec.	John Mathieson	Porter	Edinburgh	Foot amputated	15	
14 Dec.	David Watson	Goods-guard	Niddrie	Fatal	5	
15 Dec.	James Gibson	Porter	Alloa	Side bruised	4	
16 Dec.	John Bissett	Goods-guard	Ladybank	Two fingers broken	18	
20 Dec.	Thomas McLuckie	Surface-man	Grangemouth	Fatal	9	
23 Dec.	Alexander Ingram	Fireman	Greenside Sidings	Fatal	2	
23 Dec.	Henry Crombie	Porter	Alloa	Finger amputated	18	
25 Dec.	James Martin Peter Smith	Surfacemen	Glasgow	Head cut Scalp wound and hand hurt.	9	
25 Dec.	George Gibson	Clerk	Gordon	Fatal	11	
30 Dec.	James Carrick	Goods-guard	Rawyards	Leg and arm crushed	2	
30 Dec.	James Duncan	Porter	Cowlairs	Ancle, rib, and leg injured.	15	
	Total killed, 11; *injured* 31.					

IRELAND.

Date of Accident.	Name of Person.	Class of Service.	Place where the Accident happened.	Nature of Injury.	See Key on p. 88.	Remarks.
1876: Belfast and Northern Counties.						
6 Nov.	John Wilson	Porter	Belfast	Ankle crushed	7	
19 Dec.	James Kerr	Goods-porter	Derry	Fatal	1	
	Total killed, 1; *injured*, 1.					
Dundalk, Newry, and Greenore.						
4 Dec.	Patrick Hand Patrick Machin	Labourers	Dundalk	Fatal Face injured	3	Beyond their control.
	Total killed, 1; *injured*, 1.					
Great Northern of Ireland.						
7 Nov.	John Kelly	Guard	Strabane	Fatal	18	
13 Nov.	James Brown	Porter	Clones	Hand crushed	13	
27 Nov.	J. McCloud	Shunter	Omagh	Toes cut off	18	
	Total killed, 1; *injured*, 2.					
Great Southern and Western.						
23 Nov.	Fenton Bergin	Porter	Sallins	Hand amputated	2	
Midland Great Western of Ireland.						
31 Oct.	Michael Lalor	Guard	Edgworthstown	Hand crushed	18	
1 Dec.	John Williams	Engine-driver	Roscommon	Arm broken	13	
15 Dec.	Patrick Daly	Shunter	Ballinasloe	Severe	1	
27 Dec.	James Butterly	Shunter	Broadstone	Hand crushed	18	
28 Dec.	Robert Kielty	Shunter	Castlebar	Fatal	5	
	Total killed, 1; *injured*, 4.					
Waterford and Central Ireland.						
24 Dec.	Thomas Finn	Porter	Attanagh	Broken leg	15	

PART IV.

The following ACCIDENTS have also been reported to the BOARD OF TRADE during the Months of October, November, and December, 1876, by the several RAILWAY COMPANIES in the UNITED KINGDOM, in pursuance of the 6th section of the Regulation of Railways Act, 1871.

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876 :	**Furness.**				
5 Dec. -	Tyson Hudson, platelayer, was hurt by a rail striking him upon the chest, while he (with others) was unloading a waggon of rails on the line between St. Bees and Nethertown - - - - - -	–	–	–	1
	Great Eastern.				
2 Oct. -	At Broxbourne, when a stone was being lifted by a portable crane, the crane overturned and fell upon a man who was carting the stone, and bruised him - - - - - - - - - -	–	1	–	–
11 Oct. -	At Hoe Street station a man in the employ of a stone-mason was assisting to unload a block of stone from a truck, when he slipped and fell from the truck to the ground, receiving such severe injuries that he died two days afterwards - - - - - - - - - -	1	–	–	–
12 Oct. -	— Fletcher, lampman, had one of his feet caught between the hydraulic lift and the brickwork at Liverpool Street - - - - -	–	–	–	1
15 Oct. -	— Bush, ticket-taker, when walking along the rails at Stratford, slipped, and injured one of his ankles - - - - - - -	–	–	–	1
17 Oct. -	Whilst H. Henry, porter, was engaged in sheeting a truck at Yarmouth Vauxhall, he stood upon the buffer, but his foot slipped, and he fell down, injuring his knee - - - - - - - - -	–	–	–	1
18 Oct. -	Whilst W. Pitts, extra-porter, was assisting to shut the goods-shed doors at Peterborough, a pulley-slide which had been placed upright against one of the doors fell down, bruising his knee - - - - - -	–	–	–	1
18 Oct. -	William Bear, extra-porter at Chelmsford station, was standing near the crane in the goods-shed whilst it was being worked, when the handle of the crane struck him on the eye - - - - - - -	–	–	–	1
28 Oct. -	James Chandler, carman at Brick Lane goods-station, whilst unloading his van and lifting a bale of fibre, had his hand squeezed between the bale and the van, and one of his fingers crushed - - - - -	–	–	–	1
30 Oct. -	N. Clouting, porter, had his toes injured at Kennett by another porter letting a bar of iron fall upon his foot - - - - -	–	–	–	1
31 Oct. -	Whilst J. Goodwin, porter, was assisting to close a truck-door at Hythe station, his hand was caught and slightly jammed - - -	–	–	–	1
3 Nov. -	Edward Key, painter, when painting the front of the station at Stepney, fell from the ladder to the ground, and fractured his leg, and was also severely bruised - - - - - - - - -	–	–	–	1
3 Nov. -	E. Twigger, foreman porter at Brick Lane goods-station, whilst standing in the shed making arrangements for the hoisting of some trucks, a straw ring, thrown by some one unknown, struck him on the head, knocking him down, and injuring his left arm - - - - - -	–	–	–	1
4 Nov. -	Walter Bailey, goods-porter at Great Chesterford, when moving a barrel of ale, let it fall upon his foot - - - - - - -	–	–	–	1
6 Nov. -	E. Smith, engine-driver, when walking on the line at Colchester, fell down and broke his leg - - - - - - - - -	–	–	–	1
9 Nov. -	At Shadwell station, a passenger, when passing down the stairs from the platform, slipped and fell down, and in falling caught hold of a female passenger, pulling her down also, the latter only being hurt - -	–	1	–	–
11 Nov. -	At Fenchurch Street station, a passenger, when passing down the staircase from the platform, slipped and fell down, hurting his head - -	–	1	–	–
11 Nov. -	At Stepney a passenger, when stepping out of the waiting-room, slipped and fell down, and had her head and knees injured - - - -	–	1	–	–

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876 :	**Great Eastern**—*cont.*				
12 Nov.	— Medlock, engine-cleaner, when carrying a lifting-jack across the line at Cambridge, slipped and fell down, breaking his leg	–	–	–	1
20 Nov.	J. Loughton, van-lad at Brick Lane station, was carrying a van-sheet across the goods-yard, when he caught his foot between the metals, causing him to fall and break his arm	–	–	–	1
21 Nov.	James Deed, porter, whilst assisting to load some empty barrels with the crane at Whitechapel goods-station, incautiously placed his hand on the cog-wheel of the latter, crushing one of his fingers	–	–	–	1
23 Nov.	At Bentley, a passenger, when descending the stairs leading from the platform, slipped and fell down, breaking one of his legs	–	1	–	–
25 Nov.	J. Shepherd, porter, whilst putting up the door of a truck at Peterborough station, caught the end of one of his fingers between the door and side of the truck, crushing his finger very much	–	–	–	1
27 Nov.	E. Jones, lamp-man, when walking across the yard at Stratford, slipped, and sprained his ankle	–	–	–	1
30 Nov.	John Hawkins, goods-porter at Ingatestone, when standing upon the buffer of a truck to unsheet it, slipped and fell down, and was internally injured	–	–	–	1
1 Dec.	William Cole, signalman at Peterborough, in stepping back, slipped on a stone, and fell down, breaking two of his ribs	–	–	–	1
2 Dec.	T. Smith, extra-porter, was opening a truck-door at Brick Lane goods-station, when he let it fall on to one of his feet	–	–	–	1
6 Dec.	A passenger at Stratford, walking close to the edge of the platform, slipped and fell on to the ballast, and had her ankle hurt	–	1	–	–
8 Dec.	A passenger at Custom House station, in passing from the waiting-room to a train, fell over a basket on the platform, and broke his arm	–	1	–	–
12 Dec.	A passenger, when passing down the stairs at Stratford, slipped and fell down, hurting her leg	–	1	–	–
18 Dec.	A passenger, in descending the stairs from the platform, slipped and fell down, spraining her wrist	–	1	–	–
18 Dec.	James Jennings, contractor's servant at Blackwall pepper warehouse, was assisting to load a barge with malt from the wharf, and in trying to save a sack from falling into the water he lost his footing, and fell into the barge, bruising himself severely	–	–	–	1
18 Dec.	G. Bland, porter at Brick Lane station, was engaged in loading some rolls of paper into a truck, and whilst passing over the loading-board he slipped and fell, spraining his back	–	–	–	1
22 Dec.	G. Seeton, porter, whilst wheeling a box into a truck at Peterborough, slipped and fell, slightly injuring his instep	–	–	–	1
28 Dec.	A passenger, when passing down the stairs from the platform at Stepney, dropped his ticket, and in stooping to pick it up fell down several steps, and cut his head	–	1	–	–
29 Dec.	A passenger, when descending the stairs from the platform at Shadwell, slipped and fell down, and had her head and leg hurt	–	1	–	–
	Total, Great Eastern	1	11	–	23
	Great Northern.				
2 Oct.	Whilst B. Nowell, a man in the engineer's department, was stacking rails in a truck at Drighlington station, his leg was struck and broken by one of them	–	–	–	1
11 Oct.	Whilst — Stevenitt, porter, was working a travelling-crane at Corby station, he omitted to fasten the "catch," and the beam swung round and severely injured his face and chest	–	–	–	1
13 Oct.	Whilst W. Parker, porter, was assisting to load a bale into a waggon at Dewsbury station, he slipped, and, the bale falling upon him, broke his arm	–	–	–	1
8 Nov.	W. J. Willis, porter at Peterborough station, while unloading rails was injured by the side of a truck falling upon his back	–	–	–	1
24 Nov.	H. Clements, porter at King's Cross goods-station, while assisting to lift up the door of a waggon was injured by its falling upon his foot	–	–	–	1
9 Dec.	H. Ellis, contractor's servant, was severely injured whilst assisting to unload a girder from a van at King's Cross goods-station	–	–	–	1
19 Dec.	William Tasker, contractor's servant, when engaged unloading stone from a waggon at Burgh had his arm broken by a crane, which was carelessly used, falling on him	–	–	–	1
	Total, Great Northern	–	–	–	7

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876:	**Great Western.**				
29 Sept.	E. Lucas, platelayer, while walking across the line at Birmingham, fell, and injured his knee	–	–	–	1
3 Oct.	T. Price, carman, was caught between a street-van and the goods-platform at Wolverhampton, and had his leg crushed	–	–	–	1
4 Oct.	A man, who was intoxicated, fell off the platform at Landore, and injured his face	–	1	–	–
4 Oct.	W. Haines, fireman, had his head and back bruised at Bristol, in consequence of some materials, which were being hoisted up for the construction of the roof of the new station, falling upon him	–	–	–	1
7 Oct.	A man at Bridgwater station, on business, while riding on the shaft of a cart came in contact with a truck, and broke his leg	–	1	–	–
9 Oct.	J. Barnes, inspector, while crossing the line at Bristol, slipped, and sprained his ankle	–	–	–	1
10 Oct.	H. Moles, guard, had his finger pinched at Moulsford, whilst loading milk-cans	–	–	–	1
11 Oct.	A man, when standing on the line at Uffington, received an injury to his head, in consequence of the handle of a jack flying off and striking him	–	1	–	–
11 Oct.	T. Pitwood, porter, fell into an ash-pit and bruised his knee whilst walking along the line at Plymouth	–	–	–	1
12 Oct.	W. King, a ganger, when grinding an adze, near Tram Inn, had one of his fingers injured	–	–	–	1
12 Oct.	G. Hurford, lamp-boy, received an injury to his foot at Pembrey, in consequence of a piece of timber, which he was assisting to load, falling upon it	–	–	–	1
18 Oct.	A passenger, while descending the steps at Limpley Stoke station, fell and broke her leg	–	1	–	–
20 Oct.	G. Atherton, supernumerary porter, was passing a truck at Bristol, when the flap fell upon and injured his head	–	–	–	1
21 Oct.	A man was assisting to unload a truck of stone at Reading, when the handle of the crane struck and injured his head	–	1	–	–
25 Oct.	A cattle-driver was closing the flap of a cattle-truck at Launceston, when it fell upon and broke his leg	–	1	–	–
25 Oct.	J. Biddle, yardsman, was letting down the flap of a waggon at Hereford (Barton), when it fell on his foot and bruised it	–	–	–	1
25 Oct.	A passenger fell over a seaman's bag, whilst walking on the platform at Cardiff, and slightly injured his hand	–	1	–	–
31 Oct.	J. Tilly, contractor's servant, received an injury to his leg at Paddington, in consequence of a bale of goods falling upon him	–	–	–	1
31 Oct.	A. Coggins, engine-man, was tightening a pin of the connecting-rod of his engine, at Bridgwater, when the spanner slipped and injured his hand	–	–	–	1
1 Nov.	T. King, guard, received an injury to his foot at Carmarthen Junction, through a tub of butter falling upon it	–	–	–	1
1 Nov.	J. Mew, engine-cleaner, had one of his toes bruised at Swindon, in consequence of a fire-bar of an engine falling upon it	–	–	–	1
2 Nov.	Whilst F. Brown, fireman, was screwing up the gland of an engine at Taunton, the spanner slipped and bruised two of his fingers	–	–	–	1
7 Nov.	Whilst W. Pennell, porter, was carrying a cask at Bridgend, it fell on to his foot and seriously injured it	–	–	–	1
7 Nov.	A passenger, when walking along the line at Panteg, fell into a ditch, and was shaken	–	1	–	–
8 Nov.	An intending passenger, while under the influence of drink, fell off the end of the platform at Paddington, and injured his head	–	1	–	–
9 Nov.	W. Phillips, engine-cleaner, was walking through the shed at Pontypool Road, when some water ran out of a boiler, and scalded his legs	–	–	–	1
9 Nov.	C. Yates, platelayer, fell from a truck which he was unloading at Dudley, and fractured his skull	–	–	–	1
10 Nov.	J. E. Barrow, carriage-washer, while crossing the line at Paddington, fell, and fractured the small bone of his arm	–	–	–	1
10 Nov.	J. Barrow, porter, while walking backwards on the platform at Plymouth, fell on the line, and was slightly injured	–	–	–	1
11 Nov.	A. Jeffrey, platelayer, received an injury to his leg at Priestfield, through a rail striking him	–	–	–	1
15 Nov.	J. Mulliner, foreman porter, was struck on the head and injured by the shafts of a timber-carriage, which were being lowered, as he was passing, at Wolverhampton	–	–	–	1

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		Killed.	Injured.	Killed.	Injured.
1876:	**Great Western**—*cont.*				
16 Nov. -	A man whilst trespassing at Paignton fell over the carriage shutes, and injured his face and knee	–	1	–	–
17 Nov. -	J. Jones, porter, was unloading some timber at Wednesbury, when one of the pieces fell upon his hand, and injured it	–	–	–	1
17 Nov. -	J. Green, guard, as he was descending the steps of the goods-platform at Oxford, fell, and sprained his ankle	–	–	–	1
18 Nov. -	G. Stanton, van-guard, was assisting to load some barrels at Paddington, when one of them fell upon and injured his foot	–	–	–	1
21 Nov. -	A passenger, while walking along the platform at Wheatley, fell over some luggage, and injured her chest	–	1	–	–
21 Nov. -	H. Deadman, fireman, was lowering a coal-box by means of a crane at Reading, when the handle of the crane struck and injured his arm	–	–	–	1
24 Nov. -	J. Tew, goods-guard, received an injury to his face, near Weston junction, in consequence of the door of the van striking him	–	–	–	1
24 Nov. -	A man on business at the station at Smithfield was struck by a cask which he was assisting to load, and had his hip and side slightly injured	–	1	–	–
26 Nov. -	W. Scragg, signalman, was chopping some wood at Oxford, when the hatchet slipped and cut his foot	–	–	–	1
27 Nov. -	A lad while playing with some wheels at Bridgwater was killed, in consequence of two of them falling upon him	1	–	–	–
27 Nov. -	A man on business at the station at Wrexham, when unloading timber from a truck, fell, and injured his head	–	1	–	–
1 Dec. -	G. Withers, porter, received an injury to his leg at Paddington, in consequence of a box, which he was assisting to unload, falling on his leg	–	–	–	1
1 Dec. -	W. Brittain, porter, fell over a box in the parcels office at Paddington, and ruptured himself	–	–	–	1
1 Dec. -	W. Luscombe, engineman, fell into an engine-pit at Launceston, and injured his face	–	–	–	1
2 Dec. -	A guard fell through a hole in the platform at Burbage, and was severely shaken. The platform was under repair at the time	–	–	–	1
3 Dec. -	J. Day, lampman, received an injury to his head at Paddington, in consequence of a lamp falling upon it	–	–	–	1
7 Dec. -	R. H. Stephens, checker, had his leg injured by a mill-stone, which he was assisting to unload at Paddington, falling upon it	–	–	–	1
8 Dec. -	F. Skittral, porter, was wheeling a trolly at Paddington, when he came in contact with a box, which fell upon and injured his leg	–	–	–	1
9 Dec. -	A. Gray, porter, was lifting a crate by means of a crane at Redruth, when the handle of the crane struck and injured his shoulder	–	–	–	1
11 Dec. -	T. Lightfoot, labourer, was assisting to load an iron door at Smithfield, when it slipped and fell on his hand, injuring it	–	–	–	1
13 Dec. -	J. Shiner, fireman, was injured at Swindon, in consequence of some coal falling on him	–	–	–	1
13 Dec. -	Whilst W. Curtis, guard, was unloading barrels of beer at Hungerford, one of them fell on and injured his foot	–	–	–	1
14 Dec. -	F. Ryland, porter, was carrying a box at Worcester, when he fell, and the box falling on his arm injured it	–	–	–	1
15 Dec. -	J. Goold, porter, was unloading a box at Weston junction, when it fell upon and injured his leg	–	–	–	1
16 Dec. -	A passenger received an injury to his head at Didcot, through a portion of a roof lamp falling on him	–	1	–	–
18 Dec. -	J. Lea, permanent-way man, injured his hand at Oakengates, in consequence of a rail falling on it	–	–	–	1
18 Dec. -	W. Morgan, porter, fell from a truck at Smithfield, and injured his head	–	–	–	1
19 Dec. -	C. Ayres, porter, was trollying a bundle of wire at Hockley, when it fell upon and injured his foot	–	–	–	1
19 Dec. -	A passenger fell from the platform on to the line at Bridgnorth, and broke his leg	–	1	–	–
20 Dec. -	A passenger, while stooping down to pick up something which she had dropped at Cheltenham station, was struck on the head and injured by a hand-bell which a porter was ringing	–	1	–	–
21 Dec. -	A passenger, while walking on the platform at Brynmenin, fell, and broke his leg	–	1	–	–
21 Dec. -	H. Byard, porter, while trollying some cases at Paddington, fell, and the handle of the trolly injured his groin	–	–	–	1
21 Dec. -	W. Holt, porter, when sheeting a waggon at Paddington, fell across the buffers, and had his back bruised	–	–	–	1
22 Dec. -	J. Smallbone, supernumerary porter, fell from the platform on to the line at Paddington, and was shaken	–	–	–	1
22 Dec. -	J. Tripp, contractor's servant, while carrying a rail at Bristol, slipped, and the rail fell upon and injured his head	–	–	–	1

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1876:	**Great Western—*cont.***				
23 Dec. -	A passenger, while walking on the platform at Wolverhampton, fell and cut her face - - - - - - - - - -	–	1	–	–
23 Dec. -	W. C. Davis, porter, while lighting the lamps at Evershot, fell off a ladder and injured his spine - - - - - - - -	–	–	–	1
23 Dec. -	Whilst A. Cotterill, lampman, was stepping from the roof of one coach on to that of another at Worcester, he fell between them and injured his arm and hip - - - - - - - - - -	–	–	–	1
23 Dec. -	W. Bownes, examiner, received an injury to his foot at West London junction in consequence of the wheel of a waggon that he was lifting falling upon him - - - - - - - -	–	–	–	1
26 Dec. -	T. Grover, platelayer, while assisting to load a furniture-van at Southall, was knocked off the carriage shoot and one of his ribs was broken -	–	–	–	1
26 Dec. -	Whilst W. Williams, guard, was crossing the line at Smethwick junction, he stumbled over some signal wires, and, falling against a post, fractured two of his ribs - - - - - - - - -	–	–	–	1
26 Dec. -	R. Anderson, lampman, fell from the roof of a coach at Stourbridge, and fractured two of his ribs - - - - - - - -	–	–	–	1
27 Dec. -	W. Jewell, porter, was walking on the platform at Yeovil, when he slipped and sprained his ankle - - - - - - - -	–	–	–	1
28 Dec. -	W. Purslow, timber-loader, was lowering some timber by means of a crane at Presteign, when the handle struck his head - - - -	–	–	–	1
29 Dec. -	T. Dart, porter, while loading a truck at Bristol, fell and injured his leg -	–	–	–	1
31 Dec. -	H. Pargeter, checker, was putting up a signal-lamp at Banbury, when the chain broke and the lamp fell upon and injured his hand - -	–	–	–	1
	Total, Great Western - - -	1	18	–	58
	Lancashire and Yorkshire.				
4 July -	B. Maude, goods-porter, had his face cut by the handle of a crane which came off while he was working with it in the goods-warehouse at Huddersfield - - - - - - - - -	–	–	–	1
2 Aug. -	B. Kaye, goods-porter, had his back sprained in lifting some bags into a waggon at Huddersfield - - - - - - - -	–	–	–	1
2 Aug. -	W. Holland, carter, slipped when backing his lurry on to the scales in the goods-yard at Oldham Road, Manchester, and injured his hand against the shaft - - - - - - - - -	–	–	–	1
3 Aug. -	W. Pratt, carter, had his foot crushed between the warehouse-stage and a box of soap on a lurry in the goods-warehouse at Rochdale - -	–	–	–	1
4 Aug. -	R. Hill, goods-porter, sprained his ankle by slipping on the grain-warehouse steps at Manchester - - - - - - - -	–	–	–	1
4 Aug. -	R. Slater, goods-porter, had his back injured at Preston by a truck which he was wheeling coming in contact with a piece of timber - -	–	–	–	1
7 Aug. -	John Edwards, checker, had his toe injured by a piece of iron falling on to it when he was loading a waggon in the North Docks Goods Department, Liverpool - - - - - - - - -	–	–	–	1
9 Aug. -	J. Arrowsmith, ballastman, had his finger crushed whilst loading sleepers into a waggon at the Stores Yard, Castleton - - - -	–	–	–	1
15 Aug. -	A. Dawson, labourer, had his foot injured by a rail which he was removing at Blackburn - - - - - - - - -	–	–	–	1
26 Aug. -	Whilst James Wilson, goods-porter, was lifting some brushes from a waggon at Goole, he fell backwards out of the waggon and injured his back - - - - - - - - - -	–	–	–	1
29 Aug. -	Whilst H. Deacon, goods-porter, was untying a waggon-sheet in the warehouse at Rochdale, he was caught between the waggon and a shunt-horse and had his elbow injured - - - - - - - -	–	–	–	1
— Sept. -	W. Fielden, pointsman, had his elbow slightly bruised by coming in contact with a lever in a cabin at Todmorden - - - - - -	–	–	–	1
2 Sept. -	M. Mullen, porter, sprained his foot by stepping upon a railway-chair when alighting from a truck which was stationary at Liverpool - -	–	–	–	1
3 Sept. -	J. Wrigley, platelayer, had his finger crushed between a bar and a rail when pulling spikes out of a railway-chair at Blackburn - - -	–	–	–	1
16 Sept. -	When J. Johnson, fireman, was stepping upon the lid of the tank of an engine, the lid gave way and he fell through and had his body injured at Barnsley - - - - - - - - - -	–	–	–	1
19 Sept. -	W. E. Burton, yardman, had his shoulder hurt by coming in contact with a cart while riding on a waggon at Middleton - - - - -	–	–	–	1
19 Sept. -	J. Wagg, goods-guard, had his ankle sprained by falling when getting out of a van at Rawtenstall - - - - - - - -	–	–	–	1

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		Killed.	Injured.	Killed.	Injured.
1876:	**Lancashire and Yorkshire—*cont.***				
20 Sept.	W. Driver, goods-porter, had his thumb crushed by being caught by a lurry-wheel at Blackburn	–	–	–	1
2 Oct.	— Ainsworth, parcel-porter, had his legs slightly sprained by falling on the platform at Over Darwen	–	–	–	1
3 Oct.	John Denham, contractor's servant, had his finger crushed whilst at work relaying the line at Preston junction	–	–	–	1
10 Oct.	Whilst D. Haydock, porter, was employed unloading timber with the crane at Ashton, he was knocked down by a log of timber falling, and had his leg injured	–	–	–	1
10 Oct.	J. Gregory, shunter, fell down the hoist in the goods-department at Salford, and was killed	–	–	1	–
10 Oct.	W. Jackson, porter, had his hand cut by a piece of timber falling upon it at Preston	–	–	–	1
11 Oct.	Whilst W. Sutton, porter, was employed working a crane in the goods-warehouse at Blackburn, the handle of the crane worked itself off, and hit him on the head	–	–	–	1
11 Oct.	Whilst Francis Sawyer, platelayer, was assisting to remove rails near Oakenshaw junction, one fell on and crushed his foot	–	–	–	1
11 Oct.	J. Whitworth, platelayer, had his back injured by a sleeper, which he was unloading at Castleton, falling upon him	–	–	–	1
12 Oct.	William Hayes, goods-porter, injured his chest when assisting to transfer a cask of lead from one waggon to another at Todmorden	–	–	–	1
15 Oct.	J. Collins, ballast-man, had his finger crushed between a rail, which he was loading, and the top of a waggon at Sowerby Bridge	–	–	–	1
16 Oct.	W. Holroyd, platelayer, had his foot crushed by a rail, which he was assisting to remove at Hebden Bridge, falling upon him	–	–	–	1
16 Oct.	Joseph Bolton, goods-guard, had his finger injured when letting down the window of his break-van at Blackburn	–	–	–	1
19 Oct.	G. Law, goods-porter, fell from a waggon he was assisting to unload at Heckmondwike, and injured his head	–	–	–	1
19 Oct.	Michael Girty, platelayer, had his foot injured by a rail falling upon it at Salford	–	–	–	1
20 Oct.	John Craven, coal-man, had his hand crushed between the chain and pulley of a steam-crane whilst assisting to coal an engine at Wakefield	–	–	–	1
20 Oct.	John Lomax, fireman, slipped when on the top of his tender at Maudlands, near Preston, and had his leg injured	–	–	–	1
21 Oct.	Richard Moore, goods-porter, had his head injured through the failure of a girdle round a bale of cotton he was moving, which caused him to fall backward, at Clitheroe	–	–	–	1
21 Oct.	Luke Morley, porter, was trucking a bale of cotton across the warehouse-floor, when he fell and struck his mouth on the truck handle at Oldham	–	–	–	1
21 Oct.	D. Fitzpatrick, goods-porter, fell from a waggon he was engaged loading at Blackburn, and had his shoulder and hip injured	–	–	–	1
24 Oct.	E. Tweedale, goods-porter, fell from a waggon he was engaged loading at Bolton, and injured his back	–	–	–	1
25 Oct.	B. O'Hagan, goods-porter, had his fingers jammed between two bales of cotton whilst at work in the goods-department, Great Howard Street, Liverpool	–	–	–	1
27 Oct.	Charles Threlfall, watchman, fell when crossing the line at Preston, and had his leg bruised	–	–	–	1
30 Oct.	Whilst J. Gott, goods-guard, was pulling at the chain of a water-crane at Horbury junction, the crane broke, and caused him to fall and sprain his ankle	–	–	–	1
31 Oct.	John Madden, porter, when jumping from the platform to cross the line at Liverpool, had his foot sprained	–	–	–	1
31 Oct.	When A. Williamson, porter, was trucking a sack in the warehouse at Wakefield, he fell against the truck and injured his knee	–	–	–	1
1 Nov.	F. Wagner, extra-porter, had his hip injured by a fall from a waggon which he was loading with cotton in the goods warehouse, Pontefract	–	–	–	1
3 Nov.	Thomas Walsh, porter, injured his knee in jumping from one waggon to another at Blackburn goods-yard	–	–	–	1
5 Nov.	A cattle-drover fell between a cattle-stage and a cattle-waggon at Windsor Bridge, near Pendleton, in attempting to leap from the stage to the waggon, and his arm was so badly injured that it had to be amputated	–	1	–	–
6 Nov.	Thomas Holden, fireman, sprained his ankle when getting off an engine at Upholland	–	–	–	1
9 Nov.	A. Tiffanny, engine-man, slipped off the foot-plate of his engine at the locomotive-shed, Wakefield, and cut his shin-bone	–	–	–	1

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		Killed.	Injured.	Killed.	Injured.
1876:	**Lancashire and Yorkshire—*cont.***				
13 Nov. -	Luke Hobson, platelayer, fell when jumping from a platelayer's trolly at Lockwood, and had his face cut	–	–	–	1
16 Nov. -	William Beaumont, engine-cleaner, had his hand cut by an engine spring buffer, when cleaning in the locomotive-shed, Lowmoor	–	–	–	1
18 Nov. -	William Hoyle, engine-driver, when stepping from his engine, slipped and fell, at Moses Gate, injuring his legs	–	–	–	1
20 Nov. -	John Margerison, carter, fell from a waggon while he was assisting to unload a piano at Blackburn, and injured his leg	–	–	–	1
20 Nov. -	J. Mullineux, engine-cleaner, had his finger crushed by the fire-door of an engine from which he was taking the fire, at the locomotive-shed at Bolton	–	–	–	1
24 Nov. -	When — Day, porter, was assisting to lift a block of ice into a van at Brighouse it fell upon his foot, crushing it	–	–	–	1
30 Nov. -	Whilst G. Halstead, extra goods-porter, was employed loading logs of timber at Bacup, one of them rolled upon his foot, crushing it	–	–	–	1
2 Dec. -	John Disley, contractor's platelayer, had his foot crushed by a piece of timber falling upon it whilst at work at Little London, Southport	–	–	–	1
12 Dec. -	A. Shields, goods-porter, had his finger crushed between two boxes when lifting one of them from a waggon to a lurry, at Blackburn	–	–	–	1
14 Dec. -	W. Worsley, scalesman, had his foot injured by the scales at Salford	–	–	–	1
15 Dec. -	C. O'Brien, timber-porter, let a piece of deal fall upon his foot at Liverpool	–	–	–	1
16 Dec. -	F. Swift, parcel-porter, fell on the line when passing from one platform to another at Halifax, and had his ankle sprained	–	–	–	1
18 Dec. -	J. Butterworth, platelayer, slipped upon a bolt when stepping from a stationary van at Castleton, and had his ankle sprained	–	–	–	1
18 Dec. -	R. Young, inspector, had his leg sprained when going under the buffers of two waggons, in the goods-yard at Salford	–	–	–	1
19 Dec. -	James Collins, ballast-man, had his head injured by a sleeper, when engaged unloading at Sowerby Bridge	–	–	–	1
20 Dec. -	Thomas Cregg, goods-porter, had his ankle sprained by a fall, when pulling a sheet-string at a waggon side, in the goods-yard at Oldham	–	–	–	1
21 Dec. -	J. Malone, shunter, was injured by falling through a coal-shoot at Miles Platting	–	–	–	1
21 Dec. -	Edward Dwyer, labourer, slipped from a bag of provender upon which he was standing, to take down some scaffolding, at Oldham Road, Manchester, and injured his back	–	–	–	1
22 Dec. -	William Simpson, goods-porter, had the muscles of his chest sprained by a crane at Preston	–	–	–	1
22 Dec. -	W. Gee, porter, fell and cut his hand, when assisting to draw a lurry out of the yard at Heywood	–	–	–	1
23 Dec. -	E. Evans, goods-porter, had his foot injured by a cask falling from a truck in the goods-warehouse at Salford	–	–	–	1
26 Dec. -	John Warburton, goods-porter, had his arm broken by falling from a truck at Manchester	–	–	–	1
26 Dec. -	George Entwistle, inspector, was knocked down and had his leg broken by a shunt-horse which had taken fright, and which he attempted to stop, in the goods-yard at Bury	–	–	–	1
26 Dec. -	E. Goddard, labourer, had his leg broken by the falling of a sleeper from a truck in the Company's stores-yard at Castleton	–	–	–	1
26 Dec. -	Thomas Wild, goods-porter, had his loins injured by falling from a waggon upon which he was standing, covering it in the goods-yard at Middleton	–	–	–	1
26 Dec. -	W. Woods, capstan-man, had his hand hurt between a horse-collar and a chain, whilst he was moving it out of his way, in the goods-yard at Bradford	–	–	–	1
28 Dec. -	Whilst W. Lamb, goods-porter, was loading a waggon at Great Howard Street Goods Station, Liverpool, his hook slipped and went into his knee	–	–	–	1
29 Dec. -	C. Spooner, carter, had his thumb injured by falling from his lurry, in the goods-yard at Accrington	–	–	–	1
	Total, Lancashire and Yorkshire	–	1	1	74
	Lancashire and Yorkshire and London and North-Western Joint.				
13 Dec. -	C. Clapham, yardsman, when placing a railway-chair on a lever to hold it down, at Wakefield, let it fall upon his foot, injuring it	–	–	–	1

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876:	**London and North-Western.**				
1 Oct. -	A passenger, whilst walking on the platform at Pelsall in a state of intoxication, fell down the traverse-hole at the end of the platform and broke her thigh - - - - - - - - -	–	1	–	–
2 Oct. -	Whilst Edward Brien, sheeter, was loading a waggon at Canada Dock, Liverpool, he fell off and injured his side - - - -	–	–	–	1
3 Oct. -	William Reicks, porter, whilst unloading some bars of iron at Park Lane station, Liverpool, had one of his thumbs crushed in the hoist - - -	–	–	–	1
3 Oct. -	Whilst Robert Roberts, porter, was assisting to discharge a heavy case at Morpeth Dock, Birkenhead, the package canted on to and crushed his foot - - - - - - - - - -	–	–	–	1
4 Oct. -	Thomas Rice, loader, whilst loading a truck with leather at Canada Dock station, Liverpool, and in pulling over one of the bales, slipped and fell out of the truck on to the ground, seriously injuring his hip and side - - - - - - - - -	–	–	–	1
4 Oct. -	Whilst William Shaw, porter, was loading a waggon with some bales at Liverpool Road station, Manchester, another bale was pushed whilst in the slings, and he was caught between the two and crushed - -	–	–	–	1
5 Oct. -	Whilst George Newman, scalesman, was swinging a bale in the hooks at Liverpool Street station, Manchester, it came in contact with another bale, and the latter fell on to his foot, crushing his heel - - -	–	–	–	1
5 Oct. -	D. Tipler, carter, whilst carrying a truss from a lurry into a cellar at Liverpool Road station, Manchester, missed one of the steps and fell, injuring his leg - - - - - - - - -	–	–	–	1
6 Oct. -	Thomas Shaw, porter, whilst assisting to unload some bales from a waggon at Liverpool Road station, Manchester, was knocked off the waggon by a bale and had his hips injured - - - - - - -	–	–	–	1
6 Oct. -	Thomas Washington, joiner, whilst at work on the new station footbridge at Standon Bridge, fell on to the platform and had his head injured, and was badly shaken - - - - - - - -	–	–	–	1
6 Oct. -	W. Ballard, checker, whilst attempting to shift a heavy case at Broad Street station, slipped and fell to the ground, and was bruised and shaken - - - - - - - - - -	–	–	–	1
7 Oct. -	Whilst John Styling, horse-driver, was ascending on the lift with a waggon at Haydon Square, the waggon ran forward, and he jumped off and was badly injured - - - - - - - - -	–	–	–	1
9 Oct. -	A. Crissell, porter, whilst wheeling a truck at Haydon Square, came in contact with an anvil, which fell on to and injured his foot - -	–	–	–	1
11 Oct. -	John Hurst, porter, whilst lowering a cask by means of the crane at Bolton, had one of his fingers caught in the cog-wheel and severely crushed - - - - - - - - - -	–	–	–	1
12 Oct. -	William Greenhill, porter, whilst assisting to load a barge with boxes of tin at Poplar, let a box fall on to his foot, injuring it - - -	–	–	–	1
14 Oct. -	Whilst James Dowdall, porter, was assisting to unload some iron from a waggon at Waterloo station, a large bar overbalanced and fell on his foot, crushing it - - - - - - - - -	–	–	–	1
14 Oct. -	Henry Manning, porter, whilst climbing over some coal-waggons at Birkenhead, slipped and fell to the ground, injuring his wrist - -	–	–	–	1
14 Oct. -	James McIntosh, porter, whilst unloading cases of copper from a cart at the Shropshire Union Company's wharf at Liverpool, had his hand caught between the cog-wheels of the crane, and three of his fingers were severely crushed - - - - - - - - -	–	–	–	1
14 Oct. -	Whilst the servant of a timber merchant was delivering some timber from a waggon at Canada Dock station, Liverpool, one of the pieces suddenly canted and struck him, injuring his back - - - -	–	1	–	–
14 Oct. -	Whilst Mark Quantock, porter, was assisting to load some iron into a barge at Poplar, a sheet of iron fell on to and cut his hand - - -	–	–	–	1
14 Oct. -	Whilst Francis Wilkinson, porter, was assisting to load some meat into a waggon at Canada Dock, Liverpool, a piece of bone penetrated and poisoned his thumb - - - - - - - -	–	–	–	1
14 Oct. -	Whilst James Russell, porter, was assisting to load a barge at Poplar, a bar of iron fell on his foot, bruising it - - - - - -	–	–	–	1
15 Oct. -	The dead body of a man was found on the line at Kensal Green station, having apparently fallen from the bridge crossing the railway - -	1	–	–	–
16 Oct. -	Peter Houghton, porter, whilst passing a cart of cotton that was being unloaded at Waterloo station, Liverpool, one of the bales fell on to him, severely injuring him - - - - - - - - -	–	–	–	1
16 Oct. -	As a lurry was entering the goods-yard at Denton, a trespasser ran against the hind-wheel, and was knocked down, his head and side being injured -	–	1	–	–

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876:	**London and North-Western**—*cont.*				
17 Oct. -	Charles Robinson, engine-cleaner, whilst assisting to carry an engine-spring at Rugby, had his finger cut off by being caught under the spring when setting it down - - - - - - - - -	–	–	–	1
17 Oct. -	Alfred Weatherley, porter, whilst assisting to load a van at Poplar, let a bundle of tubes fall on to his foot, injuring it - - - - -	–	–	–	1
18 Oct. -	John Drake, porter, whilst assisting to unload waggons at Poplar, slipped and fell out of the loophole of the warehouse - - - - -	–	–	–	1
19 Oct. -	Whilst James Puddiphat, porter, was crossing the line at Bushey, he slipped and fell, and sprained his ankle - - - - - - -	–	–	–	1
19 Oct. -	Whilst Richard Wilson, porter, was loading some grain into a truck at Birkenhead, the handle of the crane struck him on the stomach - -	–	–	–	1
20 Oct. -	Alfred Cleaver, porter, whilst assisting to unload a barge at Poplar, caught his foot in one of the gratings, and was thrown down and badly shaken - - - - - - - - - -	–	–	–	1
20 Oct. -	Thomas Prentice, porter, whilst at work with the barge-crane at Poplar, had his fingers crushed in the cog-wheels - - - - - -	–	–	–	1
21 Oct. -	Whilst Charles Nichols, porter, was unloading a waggon at Poplar, he fell from it to the ground, and injured his back - - - - -	–	–	–	1
21 Oct. -	Whilst Martin Connor, porter, was loading some meat into a truck at Canada Dock station, Liverpool, a piece of bone penetrated and poisoned one of his fingers - - - - - - - - - -	–	–	–	1
21 Oct. -	Whilst G. Ferber, loader, was unloading some joinery from a waggon at Broad Street a piece of wood fell and jammed his hand between it and the edge of the truck - - - - - - - - -	–	–	–	1
21 Oct. -	Whilst William Fletcher, porter, was unloading some cotton at Oldham, a bale fell on to his arm, injuring it - - - - - - -	–	–	–	1
24 Oct.	A man in the employ of Messrs. Clayton, whilst piling some deals in the yard at Denton, fell to the ground in consequence of the scaffold on which he was working giving way, and received a compound fracture of the shoulder - - - - - - - - - -	–	1	–	–
24 Oct. -	A person whilst proceeding to the parcels office at New Street station, Birmingham, fell down the steps leading to the platform, and had her shoulder badly injured - - - - - - - - -	–	1	–	–
24 Oct. -	Whilst Patrick Brophy, porter, was lifting a box of tin to place it on a pile at Canada Dock, Liverpool, it fell upon his thumb, crushing it - -	–	–	–	1
24 Oct. -	Edwin Hayes, porter, whilst in the act of strapping some parcels on to the top of the parcels delivery cart at London Road station, Manchester, fell to the ground and injured his head - - - - - -	–	–	–	1
25 Oct. -	Charles Schronder, porter, whilst removing some bags of waste which were close to the lift-hole at Haydon Square, overbalanced himself, and fell into the lift-hole, and was so severely injured that he subsequently died -	–	–	1	–
30 Oct. -	Robert Wrist, inspector, whilst stepping on to the slide at New Street station, Birmingham, fell and injured his head - - - - -	–	–	–	1
30 Oct. -	Whilst John Smith, porter, was unloading some casks of beer from a waggon at Poplar, one of the casks fell on to his leg, injuring it - - -	–	–	–	1
30 Oct. -	Whilst John Mind, porter, was removing a heavy stone which was close to one of the pillars at Waterloo station, Liverpool, the stone fell on to his foot, badly bruising it - - - - - - - - - -	–	–	–	1
1 Nov. -	A passenger, whilst a truck of luggage was being sheeted at New Street station, Birmingham, approached in the opposite direction, and ran against it and was shaken - - - - - - - - -	–	1	–	–
3 Nov. -	Whilst James Russell, porter, was loading some iron at Poplar, one of the bars fell on to his foot, bruising it - - - - - -	–	–	–	1
4 Nov. -	Whilst J. Romain, porter, was crossing the floor of the warehouse at Liverpool Road, Manchester, fell through the trap, and injured his back -	–	–	–	1
4 Nov. -	Whilst J. S. Puddicombe, porter, was at work in the arch at Broad Street, a case fell on to his foot, bruising it - - - - - -	–	–	–	1
4 Nov. -	Whilst — Appleby, a time-keeper, was getting coal out of the shed at Copley Hill, a large piece fell on to and broke his arm - - - - -	–	–	–	1
4 Nov. -	Frederick Watkins, porter, whilst walking on the platform at Edge Hill station, Liverpool, struck his foot against a hand-barrow, and had his ankle seriously injured - - - - - - - - -	–	–	–	1
5 Nov. -	A man in the employ of Messrs. W. S. & N. Caine, whilst obtaining particulars of the marks and numbers of boxes of tin at Waterloo station, Liverpool, fell off the platform into a van standing near, and severely injured his shoulder - - - - - - - - -	–	1	–	–
6 Nov. -	Whilst Richard Law, porter, was unloading some iron bars at Haydon Square, one of them fell on to his foot, crushing his toes - - -	–	–	–	1

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**London and North-Western—*cont.***				
7 Nov. -	Whilst Charles Stall, porter, was loading some casks of metal on to a waggon at Park Lane station, Liverpool, one of them fell on to his hand, crushing his fingers	–	–	–	1
7 Nov. -	Whilst William Wright, breaksman, was passing a waggon at Charity siding, Bedworth, a large piece of coal fell on to his head	–	–	–	1
7 Nov. -	Whilst George Hinds, porter, was unloading a pair of waggon wheels with the travelling crane, at Birkenhead station, the sling slipped, and the wheels struck him, injuring his side and foot	–	–	–	1
7 Nov. -	William Martin, porter, whilst loading a waggon with wool at Haydon Square, fell from the top on to the ground, and had his ankle badly fractured	–	–	–	1
8 Nov. -	H. Bevan, cleaner, whilst working a crane at Norton Bridge, had his fingers caught between the wheel and pinion, breaking three of them	–	–	–	1
8 Nov. -	Whilst John Rimmer, cart-boy, was standing between two carts at Canada Dock station, Liverpool, one of them was suddenly backed, and he was caught between them, having his head crushed	–	–	–	1
9 Nov. -	Whilst T. Kane, coalman, was at work in the sheds at Copley Hill, a box of coal fell on to his wrist, breaking it	–	–	–	1
13 Nov. -	Whilst Oswald Leigh, platelayer, was unloading some sleepers at Hazelgrove, one of them fell upon his hand, crushing one of his fingers	–	–	–	1
13 Nov. -	Whilst — North, a pointsman, was adjusting the up-signal wire at Oundle, the lever working the wire flew back, and the wire was drawn violently through his hand, lacerating it	–	–	–	1
14 Nov. -	Frederick Quinn, porter, whilst untying a sheet at Camden, slipped off the truck and fell on the line, and was shaken and bruised	–	–	–	1
14 Nov. -	Whilst Thomas Hawkins, platelayer, was unloading some rails at Houghton, a rail fell on to his hand, crushing one of his fingers	–	–	–	1
15 Nov. -	Joseph Burgess, porter, whilst unloading his lurry at Queen Dock, Park Lane station, Liverpool, fell backwards off the waggon, and had his right arm broken and wrist dislocated	–	–	–	1
16 Nov. -	Whilst George Young, checker, was unloading beer at Messrs. Bass' stores at Poplar, his leg was caught between two casks, and injured	–	–	–	1
16 Nov. -	Thomas Foster, porter, had his leg poisoned by a piece of bone penetrating it, whilst he was unloading meat at Liverpool	–	–	–	1
17 Nov. -	J. H. Towler, porter, whilst running along the passage leading from the warehouse to the Inquiry Office at Liverpool Road station, Manchester, slipped and fell, and had his elbow fractured	–	–	–	1
18 Nov. -	John Gordon, porter, whilst loading some goods at Broad Street, fell between the waggon and the bank, and injured his leg	–	–	–	1
19 Nov. -	A passenger, when crossing the line at Saddlesworth, fell against a projecting wall at the end of the platform, and had his shoulder and elbow injured	–	1	–	–
21 Nov. -	R. Edwards, porter, whilst removing a case of goods at Liverpool Road station, Manchester, let it fall on to his foot, crushing it	–	–	–	1
21 Nov. -	C. J. Wheal, porter, whilst crossing Messrs. Pickford & Co.'s lift at Broad Street station, fell down the man-hole, and bruised his leg	–	–	–	1
22 Nov. -	Whilst Thomas Unsworth, horse-driver, was leading his horse at Crown Street station, Liverpool, the animal trod on his foot, injuring it	–	–	–	1
23 Nov. -	Whilst Thomas Hayes, bar-boy, was putting some fire-bars into an engine at Sutton Oak, the end of a bar fell on to his finger, cutting the end off	–	–	–	1
23 Nov. -	Whilst Edward Gearty, porter, was stowing some bales on the new extension quay at Waterloo station, Liverpool, his fingers were caught by the clam-hooks, and pinched	–	–	–	1
24 Nov. -	G. W. Wilks, porter, whilst assisting to unload a barge at Poplar, had his head injured by the handle of the crane	–	–	–	1
25 Nov. -	Whilst James Dale, porter, was stowing some cotton on the quay at Waterloo station, Liverpool, a bale fell on to and injured his leg	–	–	–	1
25 Nov. -	John Drake, porter, whilst assisting to turn a case over, in the warehouse at Poplar, slipped, and the case fell on to his hand, injuring it	–	–	–	1
25 Nov. -	Whilst John Bate, platelayer, was shifting some rails at Alderley Edge, one of them fell on to his foot, crushing it	–	–	–	1
27 Nov. -	John Webster, porter, whilst stowing a load of cotton on the quay at Park Lane station, Liverpool, fell on to the line, and had his head and shoulder badly injured	–	–	–	1
1 Dec. -	Whilst J. E. Smith, porter, was shifting an iron pipe from a barrow at Broad Street station, the pipe slipped on his foot, bruising it	–	–	–	1
2 Dec. -	Whilst James Boardman, porter, was assisting to load an iron tank at Park Lane station, Liverpool, it came in contact with his hand, bruising it	–	–	–	1
2 Dec. -	John McIntyre, porter, whilst loading some iron at Haydon Square, had his hand caught between a sling of iron and that which was already loaded, and badly lacerated	–	–	–	1

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876 :	**London and North-Western—*cont.***				
4 Dec. -	Thomas Pocock, porter, whilst loading a waggon at Camden, a hand-barrow which he was using slipped between the waggon and the bank, and fell upon his foot, crushing it - - - - - -	–	–	–	1
5 Dec. -	Robert Castleton, porter, whilst unloading a truck at Poplar, had his hand caught between two hogsheads and crushed - - - -	–	–	–	1
8 Dec. -	Whilst Thomas Robinson, porter, was sending up a hoist of leather from the truck to the warehouse at Park Lane station, Liverpool, the leather slipped out of the sling, and fell upon and bruised him - - -	–	–	–	1
9 Dec. -	Peter McGroder, porter, whilst carrying a sack of grain at Waterloo station, Liverpool, stumbled and fell, and was badly injured - - -	–	–	–	1
9 Dec. -	Whilst Thomas Bibby, porter, was loading timber at Canada Dock station, Liverpool, some of the timber fell on to his leg, severely injuring his ankle	–	–	–	1
9 Dec. -	Whilst A. M. St. Leger, porter, was loading some barrels at Camden, he fell down, and his hand was caught between the casks and crushed - -	–	–	–	1
10 Dec. -	William Fitch, porter, was loading timber into a barge at Poplar, when he fell and injured his ankle - - - - - - -	–	–	–	1
11 Dec. -	John McElwin, shunter, whilst unloading some iron from a truck at Park Lane station, Liverpool, fell off the waggon and injured his back -	–	–	–	1
11 Dec. -	J. Hough, engine-man, whilst at work in the capstan-pits at Curzon Street, Birmingham, had his face and hands severely burnt by an explosion of gas	–	–	–	1
11 Dec. -	Whilst George Scott, lighterman, was wheeling a barrow at Poplar, it overbalanced and fell into a barge, and a piece of the iron wheel broke off and struck him in the throat - - - - - -	–	1	–	–
12 Dec. -	William Holton, caller-off, whilst assisting to place a chaff-cutter upon a hand-barrow at Broad Street station, the machine fell upon and badly bruised his foot - - - - - - -	–	–	–	1
13 Dec. -	Whilst a passenger was descending the staircase at Watford station he fell down the steps and had his head badly cut - - - -	–	1	–	–
13 Dec. -	Whilst T. A. East, porter, was warehousing goods at Poplar, he fell out of the loop-hole into a truck, and was severely injured - - -	–	–	–	1
13 Dec. -	Herbert Partridge, porter, whilst unloading some iron at Haydon Square, fell out of the truck on to the line and had his leg cut - - -	–	–	–	1
14 Dec. -	Patrick Field, porter, whilst loading fresh meat at Canada Dock station, Liverpool, fell from the cart on to the ground, injuring his side - -	–	–	–	1
14 Dec. -	Henry Camp, porter, whilst loading a van under the loop-hole at Poplar, fell from the top of the load to the ground, badly injuring his arm -	–	–	–	1
14 Dec. -	Whilst John Hess, porter, was assisting to load a waggon with heavy scrap-iron at Waterloo station, Liverpool, a piece of the rusty metal struck him on the leg, injuring it - - - - - - - -	–	–	–	1
14 Dec. -	Whilst John Addie, lamp-man, was sweeping the lamp-room at Victoria station, Manchester, his brush came in contact with a bar of iron, which fell on to his hand, breaking two of his fingers - - - -	–	–	–	1
15 Dec. -	Whilst Louis Northway, porter, was loading some cases of iron into a barge at Poplar, one of the cases fell on to his foot, injuring it - - -	–	–	–	1
16 Dec. -	E. Holleram, fireman, whilst some men were lifting an axle-box on to an engine at Willesden, had his hand injured by the box falling on it -	–	–	–	1
18 Dec. -	James Barr, porter, whilst walking on the stage in the warehouse at Birkenhead, fell off the platform on to the ground, and had his thigh bruised and side injured - - - - - - -	–	–	–	1
21 Dec. -	Whilst John Brown, porter, was unloading an iron girder at Canada Dock station, Liverpool, the girder fell on to his foot, severely bruising it -	–	–	–	1
21 Dec. -	Whilst Thomas Foster, porter, was unloading bales of cotton at Canada Dock station, Liverpool, the iron band of one of the bales broke and struck him on the leg, severely injuring it - - - - - - -	–	–	–	1
22 Dec. -	James Bibby, labourer, whilst unloading some flags at Cheadle Hulme, had his hand crushed - - - - - - - -	–	–	–	1
23 Dec. -	Whilst B. Little, porter, was loading some meat on to a van at Broad Street station, a side of beef slipped from the crane-hook and knocked him off the van, and badly injured him - - - - - - -	–	–	–	1
23 Dec. -	Whilst H. Bailey, porter, was unloading sacks of flour from a waggon at Liverpool Road station, Manchester, one of the sacks fell off the waggon and knocked him down, his ankle being badly injured - - -	–	–	–	1
26 Dec. -	William Collier, labourer, whilst unloading some timber from a waggon at Crewe, fell off the truck on to the ground, and had his wrist broken -	–	–	–	1
26 Dec. -	J. G. Harberg, porter, whilst securing a sheet on a waggon at Canada Dock station, Liverpool, fell on to the buffer of a waggon and injured his side - - - - - - - - -	–	–	–	1
26 Dec. -	W. Hampton, porter, whilst loading two cases at Liverpool Road station, Manchester, was crushed between them, and had his chest injured -	–	–	–	1

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**London and North-Western—*cont.***				
26 Dec. -	William Pennington, porter, whilst standing on the buffers of a waggon loading boards at Canada Dock station, Liverpool, fell heavily to the ground and had both his legs bruised - - - - - -	–	–	–	1
27 Dec. -	Whilst W. Milligan, porter, was loading some bales of cotton at Waterloo station, Liverpool, the iron grabs used in lowering the bales struck him on the knee, injuring it - - - - - - - -	–	–	–	1
27 Dec. -	Whilst Thomas Rushton, porter, was loading some boards on a waggon at Canada Dock station, Liverpool, a plank slipped through his hands and fell on to his foot, injuring his ankle - - - - - -	–	–	–	1
28 Dec. -	Whilst William Cramsie, porter, was removing the dog-hooks from a log of timber which he was loading on a waggon at Canada Dock station, Liverpool, the log canted over and fell on him, injuring his leg - - -	–	–	–	1
30 Dec. -	B. Thomas, carter, whilst standing on a lorry when entering Park Lane station, Liverpool, fell backwards, and a wheel passed over one of his legs, badly bruising it - - - - - - - -	–	–	–	1
31 Dec. -	Whilst James Freckleton, porter, was loading a waggon at Waterloo station, Liverpool, his hand was caught between two casks and slightly crushed -	–	–	–	1
	Total, London and North-Western -	1	10	1	105
	London and North-Western and Great Western Joint.				
5 Oct. -	Whilst a passenger was standing on the platform at Shrewsbury he received an injury to his foot in consequence of the wheel of a luggage trolly passing over it - - - - - - - -	–	1	–	–
9 Nov. -	A passenger, who was under the influence of drink, fell, when crossing the line at Leominster, and injured his head and thigh - - -	–	1	–	–
13 Nov. -	A passenger, after alighting from a train at Hereford, walked across the platform and fell into a carriage-bay, cutting her knee - - -	–	1	–	–
	Total, London and North-Western and Great Western Joint -	–	3	–	–
	London and South-Western.				
15 Nov. -	James Hugo, hired man employed in Company's timber-gang, had his skull fractured by the handle of a crane, which flew off while it was being used at Bridestowe station - - - - - - - -	–	–	–	1
	London, Brighton, and South Coast.				
2 Oct. -	A. Stoner, checker, had his leg broken by a case which fell from a truck he was unloading at Willow Walk station - - - - -	–	–	–	1
4 Oct. -	R. Cannard, labourer, fell from a truck and injured his head whilst unloading timber at New Cross - - - - - -	–	–	–	1
18 Oct. -	W. Heighton, porter, fell from the Sailor Bridge into the road at Norwood junction, and broke his leg - - - - - -	–	–	–	1
20 Oct. -	D. Coales, goods-porter, while wheeling a barrow, fell off the loading-dock at Willow Walk station, and bruised his side - - - -	–	–	–	1
8 Nov. -	J. Gibbs, signalman, slipped and fell on the line at York Road station, and had his arm broken - - - - - - - -	–	–	–	1
11 Nov. -	R. Rooks, goods-porter, when walking along the platform at Battersea wharf, the gas being out, missed his footing and fell off the platform on to the ground, spraining his ankle and bruising his shoulder - -	–	–	–	1
13 Nov. -	James Brighty, guard, while crossing the rails at Victoria station, had his foot caught in a rail, and fell on to a check rail, receiving an injury to his chest and ribs - - - - - - - -	–	–	–	1
17 Nov. -	W. Mason, goods-porter, while working a crane at Battersea wharf, had his hand entangled in the rope, and his fingers lacerated - - -	–	–	–	1
27 Nov. -	H. Gambier, goods-porter, had his foot and leg injured, through a case, which he was loading at Willow Walk station, slipping and falling on him - - - - - - - - -	–	–	–	1
30 Nov. -	George Rose, porter, was knocked down at Croydon, while delivering goods, by a box which fell over 30 feet on to his head; he received severe injuries to head and face - - - - - -	–	–	–	1

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**London, Brighton, and South-Coast—*cont.***				
16 Dec. -	A passenger, when running along the platform at West Croydon station, came into collision with another passenger, and fell on to the rails, cutting her head - - - - - - - - - - -	–	1	–	–
16 Dec. -	James Stanford, porter, had his leg bruised at Three Bridges station, by letting a cask of fish fall on it - - - - - - -	–	–	–	1
18 Dec. -	Thomas Simpson, bricklayer, slipped off the platform on to the rails at Brighton station, and broke his leg - - - - - -	–	–	–	1
22 Dec. -	W. Playfoot, engine-cleaner, had his finger crushed while removing a valve and some pipes at New Cross station - - - - - -	–	–	–	1
22 Dec. -	John Hookway, loader, in descending from a truck which he had been loading at Willow Walk station, fell and hurt his side and chest - -	–	–	–	1
24 Dec. -	Robert Addis, lamp-lad, fell into an engine-pit at New Cross station, and had the lower part of his back injured - - - - - -	–	–	–	1
29 Dec. -	H. G. Relf, porter, had his fingers smashed while loading iron at Willow Walk station - - - - - - - - - - -	–	–	–	1
	Total, London, Brighton, and South Coast - -	–	1	–	16
	London, Chatham, and Dover.				
26 Dec. -	S. Porter, platelayer, was walking along the line at Faversham, going round his length, when his foot slipped, and he fell and broke his leg - -	–	–	–	1
	Macclesfield Committee.				
29 Nov. -	Anthony Hardy, goods-porter, whilst unloading some castings at Bollington, had his foot bruised by one of the castings falling upon it - -	–	–	–	1
	Manchester, Sheffield, and Lincolnshire.				
22 Oct. -	R. Boardman, signal-lighter, was on the ladder lighting the signals at Guide Bridge, when his foot slipped, and his leg was slightly injured - -	–	–	–	1
23 Oct. -	William Shepherd, goods-porter, whilst engaged loading malt at Barton, fell off the wharf, and injured his right ankle - - - - -	–	–	–	1
24 Oct. -	H. Bolton, goods-porter, was in the act of lifting a bale by means of a crane at Manchester, when the crane swung round, and his leg was caught between the bale and a waggon, his knee being badly crushed - -	–	–	–	1
27 Oct. -	Some men in the employ of a timber merchant were engaged loading timber at Barnsley junction, when a piece of timber fell upon one of them, and injured his spine - - - - - - - - -	–	1	–	–
10 Nov. -	T. Howard, goods-porter, had his foot crushed by a roll of lead which he was assisting to remove from the scale at Ardwick - - -	–	–	–	1
14 Nov. -	C. Scargill, checker, was assisting to unload a waggon at Sheffield, when a casting which had been reared against the waggon fell upon his foot, causing slight injury - - - - - - - -	–	–	–	1
17 Nov. -	Albert Stevens, goods-foreman, fell from the loading-stage to the ground at Ardwick, and sprained his ankle, owing to a transhipping board upon which he had stepped having slipped from under him - - -	–	–	–	1
22 Nov. -	P. Lowe, goods-guard, fell over a point-rod, which he had failed to see, and sprained his wrist, at Hexthorpe - - - - - -	–	–	–	1
23 Nov. -	Alfred Green, lurry-boy, in the employ of Messrs. Thompson, McKay, & Co., carriers, with another boy were mischievously moving a hand-barrow in a store-room at Manchester, when one of the boys fell through the hoist aperture, and was very seriously injured - - - - - -	–	1	–	–
2 Dec. -	J. Savage, yardman, was assisting to unload a lurry at Ardwick, when the horse suddenly started, and he fell to the ground, injuring his back -	–	–	–	1
8 Dec. -	John Wade, platelayer, whilst walking along the line near to Darnall, fell over his pickaxe, the end of which pierced his body - - -	–	–	–	1
21 Dec. -	J. Doney, goods-porter, was unloading a bale of wool from a waggon at Guide Bridge, when the crane-hook slipped, and he fell to the ground, slightly injuring his leg - - - - - - - -	–	–	–	1
22 Dec. -	J. Williams, sheeter, fell off a waggon which he was sheeting at Ardwick, and slightly injured his side against the edge of the loading-stage -	–	–	–	1
	Total, Manchester, Sheffield, and Lincolnshire - -	–	2	–	11

ENGLAND AND WALES.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others.		Servants of Companies.	
		Killed.	Injured.	Killed.	Injured.
1876:	**Metropolitan.**				
24 Oct.	J. Curtis, labourer, while repairing the roof at Moorgate Street station, fell on to the platform, and was fatally injured	–	–	1	–
16 Nov.	A passenger walked off the platform at High Street, Kensington, and broke his thigh	–	1	–	–
22 Nov.	A passenger in hurrying down the ingress staircase to the down platform at King's Cross station, after having descended three or four steps, was seen to suddenly pitch forward, and fall to the bottom of the first flight of stairs. She fractured her skull, and received an injury to the brain	–	1	–	–
	Total, Metropolitan	–	2	1	–
	North-Eastern.				
3 Oct.	W. Farndale, porter, whilst engaged in disinfecting cattle-waggons at York, had his foot injured by a waggon-door falling upon it	–	–	–	1
7 Oct.	A man, who was under the influence of liquor, fell against an iron pillar in Monkwearmouth station, Sunderland, and cut his head	–	1	–	–
13 Oct.	E. Waddington, platelayer, had his foot injured whilst unloading rails from a bogie at the Branch End, Sheldon	–	–	–	1
16 Oct.	W. B. Elliott, porter, had one of the fingers of his left hand crushed whilst unloading old rails at the Trafalgar station, Newcastle	–	–	–	1
17 Oct.	John Welch, goods-porter, had his shoulder injured whilst engaged in the goods-yard at Monkwearmouth, Sunderland	–	–	–	1
17 Oct.	John Trice, casual porter, had his neck and arm injured whilst assisting to unload some bars of iron on the Albert Dock at Hull	–	–	–	1
18 Oct.	J. Muir, porter, had his foot injured whilst lifting a block of ice on to a barrow in the Central station, Newcastle	–	–	–	1
19 Oct.	As a passenger was descending a flight of steps leading to the down platform at Ferryhill, he slipped and fell, slightly injuring his hand and knee	–	1	–	–
21 Oct.	Anthony Craddock, porter, fell and injured his side whilst sheeting a waggon at Gilling	–	–	–	1
23 Oct.	J. Middlege, signalman, when cleaning the windows of the Byers Green signal cabin, Ferryhill, lost his balance, and fell to the ground, and was bruised and shaken	–	–	–	1
23 Oct.	Charles Fail, goods-porter, had one of his feet injured whilst engaged in the goods warehouse at the Forth station, Newcastle	–	–	–	1
24 Oct.	James Todd, porter, had his hand injured whilst removing an oil-cake crusher from a waggon at Morpeth	–	–	–	1
25 Oct.	Henry Wheatley, guard, fell into the loading-dock at Haltwhistle, and injured his leg	–	–	–	1
3 Nov.	W. Trueman, goods-porter, had his foot injured whilst unloading some blocks of stone in the new goods-yard at York	–	–	–	1
6 Nov.	George Johnson, goods-porter, had his hand injured whilst assisting to load a boiler in the goods-warehouse at Marsh Lane, Leeds	–	–	–	1
7 Nov.	— Sinclair, rulleyman, whilst unloading some angle iron at South Shields, fell and injured his back and head	–	–	–	1
8 Nov.	Francis Bowland, goods-porter, fell and injured his head and back, whilst loading a truck of hay at Sherburn station	–	–	–	1
11 Nov.	J. Walters, casual porter, had his head injured by a crane-chain, when engaged in loading a waggon at the New Creek at Hull	–	–	–	1
16 Nov.	George Hammond, contractor's servant, fell and injured his leg in removing a sheet from a waggon in the goods-warehouse at West Hartlepool	–	–	–	1
17 Nov.	F. Grubb, crane-boy, whilst engaged in the New Creek at Hull, fell on to a lighter, and was somewhat shaken	–	–	–	1
18 Nov.	J. Wilson, goods-porter, whilst sheeting a waggon at Hull, fell and injured his shoulder	–	–	–	1
19 Nov.	Whilst some coals were being teemed into the S.S. Bwllfa, at Tyne Dock, a large piece of coal fell over the spout side on to the head of a trimmer, Z. Purvis, injuring it so severely that he died shortly afterwards	–	–	1	–
27 Nov.	John S. Smith, porter, accidentally fell, in getting off a rulley in motion, in the goods-yard at Hull, and injured his arm	–	–	–	1
30 Nov.	John Oakley, porter, was accidentally crushed between a waggon and a rulley which was being moved in the goods-warehouse at Marsh Lane, Leeds	–	–	–	1
1 Dec.	Thomas Higgins, sheetman, had one of his knees slightly injured whilst sheeting a waggon at South Dock, Sunderland	–	–	–	1
4 Dec.	W. Morrow, slater, whilst engaged slating the roof of a cabin at Flass junction, fell and injured his hip and wrists	–	–	–	1

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**North-Eastern—*cont.***				
6 Dec.	P. O'Neil, porter, had his hand injured whilst unloading rails at Hull	–	–	–	1
13 Dec.	J. Richardson, goods-porter, had his foot crushed whilst assisting to load some forgings in the goods-warehouse at York	–	–	–	1
15 Dec.	William Thornton, porter, had one of his feet injured whilst unloading some casks from a waggon in the goods-warehouse at Wilmington	–	–	–	1
16 Dec.	J. Chambers, loader, was assisting to load a waggon at the new creek at Hull, when he was struck by a bag of grain which was being conveyed by a crane to the waggon, and had his arm and side injured	–	–	–	1
18 Dec.	George Leveson, porter, had his head injured whilst assisting to unload some casks from a waggon in the goods-warehouse at York	–	–	–	1
18 Dec.	John McLeod, porter, had his hand injured whilst working a crane in the goods-yard at Monkwearmouth station, Sunderland	–	–	–	1
20 Dec.	J. Woodhouse, goods-porter, had his hand injured when assisting to unload some barrels of beer at Morpeth	–	–	–	1
21 Dec.	John Acerbi, porter, strained his back when attempting to lift up the side door of a waggon at Marsh Lane, Leeds	–	–	–	1
21 Dec.	N. Baxter, porter, whilst loading a rulley in the goods-warehouse at Carlisle, fell and injured his shoulder	–	–	–	1
25 Dec.	Whilst John Nelson, platelayer, was engaged on the line on the Dearness Viaduct of the Team Valley Extension, a piece of iron from a hammer struck him on the shoulder, injuring it	–	–	–	1
27 Dec.	George Harbottle, joiner, had his hand injured whilst loading up some old railway plates at West Hartlepool	–	–	–	1
	Total, North-Eastern	–	2	1	34
	North Union.				
15 Dec.	Whilst Thomas Smith, porter, was trucking a large case at Preston, the case slipped from the truck on to his foot and injured it	–	–	–	1
	South-Eastern.				
13 Oct.	A waggoner, employed by a private trader, whilst unloading hops at Smeeth, in a state of intoxication it was supposed, fell off the truck, and was fatally injured	1	–	–	–
	Whitehaven, Cleator, and Egremont.				
18 Oct.	Whilst James Miller, joiner, was assisting to erect an extension of the goods-shed at Cleator Moor, the shear-legs came down upon him and severely injured his spine	–	–	–	1
	Total, England and Wales	4	50	4	335

SCOTLAND.

1876:	**Caledonian.**				
3 Oct.	Thomas Jardine, labourer, in the employment of a coal agent, while discharging a truck of coal at the north side of Leith station, fell from the top of the waggon, and was fatally injured	1	–	–	–
6 Oct.	A horse and lorry, driven by a lad, came into contact with a waggon of coal standing outside the gate at No. 2 Crane, General Terminus, Glasgow, and the driver had his legs jammed	–	1	–	–
26 Oct.	A boy fell from a platform in the Buchanan Street goods-station, Glasgow, and a lurry ran over his neck, killing him instantaneously	1	–	–	–
27 Oct.	Whilst Thomas Wilson, goods-porter, was discharging castings from a waggon at Glasgow, south side, one of them which he was turning over fell back on his right hand, crushing three of his fingers	–	–	–	1
4 Nov.	A carter was knocked down at Dundee East by his horse, which had taken fright, and had one of his legs fractured	–	–	–	1

SCOTLAND.

Date of Accident.	Name of Company, with Nature and Cause of Accident.	Passengers and others. Killed.	Passengers and others. Injured.	Servants of Companies. Killed.	Servants of Companies. Injured.
1876:	**Caledonian—*cont.***				
15 Nov. -	An intending passenger, when going down the stair leading to the down-platform at Hamilton Central station, stumbled and fell to the bottom of the stair, bruising his head. He was very much the worse of drink at the time - - - - - - - - -	–	1	–	–
18 Nov. -	John Milton, goods-porter, when closing the door of a goods-van in Glasgow, Buchanan Street goods-station, had his left hand caught, and two of his fingers crushed - - - - - - -	–	–	–	1
18 Nov. -	William Gardner, engine-driver, when stepping off the leading footstep of an engine which he had been oiling at Ecclefechan, put his foot on a piece of slag, which caused him to fall, spraining his ankle - - -	–	–	–	1
21 Nov. -	James Devlin, labourer, while loading old sleepers into a waggon at Cambuslang, had his right hand caught between a sleeper and a waggon and bruised - - - - - - - - -	–	–	–	1
30 Nov. -	Whilst Terence Scrienon, goods-porter, was assisting to load barrels of flour into a waggon in Buchanan Street goods-station, Glasgow, one of the barrels, which was resting on the edge of the waggon, slipped and caught his left hand, crushing two of his fingers - - -	–	–	–	1
	Total, Caledonian - - - -	2	2	–	6
	Total, Scotland - - - - -	2	2	–	6

IRELAND.

IRELAND.

1876:	**Midland Great Western of Ireland.**				
20 Oct. -	A trespasser, when hooking a chain attached to a shunting-horse at Sligo, had one of his fingers broken between the links - - - -	–	1	–	–
	Total, Ireland - - - -	–	1	–	–

Board of Trade,
February 1877.

T. H. FARRER.

LONDON:
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For Her Majesty's Stationery Office.

RETURN to an Order of the Honourable The House of Commons, dated 19 April 1877 ;—*for*,

RETURN

OF

ACCIDENTS AND CASUALTIES

REPORTED TO THE BOARD OF TRADE BY THE SEVERAL RAILWAY COMPANIES IN THE UNITED KINGDOM;

TOGETHER WITH

REPORTS OF THE INSPECTING OFFICERS OF THE RAILWAY DEPARTMENT TO THE BOARD OF TRADE

UPON

CERTAIN ACCIDENTS WHICH HAVE OCCURRED ON RAILWAYS,

For the Quarter ending March 1877,

In pursuance of the Regulation of Railways Act (1871), 34 & 35 Vict. cap. 78.

(*Sir Charles Adderley.*)

Ordered, by The House of Commons, *to be Printed*,
19 *April* 1877.

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Summary of Accidents and Casualties which have been reported to the Board of Trade as having occurred upon the Railways in the United Kingdom, during the months of January, February, and March 1877.

I.—Accidents to Trains, Rolling-Stock, Permanent-Way, &c.

Accidents to trains, rolling-stock, permanent-way, &c. caused the death of 8 persons, and injury to 194, viz. :—

	Killed.	Injured.
Passengers	5	155
Servants of companies	3	35
Other persons	—	4
Total	8	194

During the three months there were reported 12 collisions between passenger-trains or parts of passenger-trains, by which 34 passengers and 2 servants were injured; 30 collisions between passenger-trains and goods or mineral-trains, engines, &c., by which 56 passengers, 11 servants, and a man who was riding in a train of empty carriages unknown to the Company, were injured; 3 collisions between goods-trains or parts of goods-trains, by which 3 servants were injured; 23 cases of passenger-trains or parts of passenger-trains leaving the rails, by which 5 passengers and 1 servant were killed, and 54 passengers and 5 servants were injured; 11 cases of goods-trains or parts of goods-trains leaving the rails, by which 1 servant was injured; 4 cases of trains or engines travelling in the wrong direction through points, by which 1 passenger and 2 servants were injured; 4 cases of trains running into stations or sidings at too high a speed, by which 8 passengers were injured; 30 cases of trains running over cattle or other obstructions upon the line, by which a platelayer's wife who was riding upon a trolley, and 1 servant were injured; 3 cases of failures of machinery, springs &c. of engines, by which 2 servants were injured; the failure of an over-bridge, by which 2 men in charge of a road locomotive were injured; 11 cases of flooding of portions of the permanent-way, by which 2 servants were injured; 11 cases of slips in cuttings or embankments by which 2 servants were killed and 6 injured; and 8 other accidents of a miscellaneous description, by which 2 passengers were injured.

Of other casualties, but in which there was no personal injury, there were 12 cases of trains running through gates at level-crossings; 1 case of the bursting of the boiler of an engine; the failure of 162 wheel-tyres, 1 wheel, 48 axles, and four couplings; 120 broken rails; and 2 cases of fires in trains.

Of the 162 tyres which failed, 11 were engine-tyres, 6 were tender-tyres, 2 were carriage-tyres, 1 was a van-tyre, and 142 were wagon-tyres; of the wagons, 111 belonged to owners other than the railway companies; 35 tyres were made of steel, and 124 of iron, while the material of 3 was not stated; 10 of the tyres were fastened to their wheels by Gibson's patent method, and 11 by Beattie's patent, but none of these left their wheels when they broke; 139 tyres were fastened to the wheels by bolts or rivets, and 2 of these left their wheels when they failed; whilst in 2 cases the method of fastening was not reported; 24 tyres broke at rivet-holes, 22 in the solid, 10 at the weld, and 102 split longitudinally or bulged; whilst two failed in other ways, and in 2 cases the nature of failure was not reported.

Of the 48 axles which failed, 26 were engine-axles, viz., 21 crank or driving, and 5 leading or trailing; 1 was a tender-axle, 1 was a carriage-axle, 18 were wagon-axles, and

2 were axles of salt-vans. Six wagons, including the salt-vans, belonged to owners other than railway companies. Of the 21 crank or driving axles, 19 were made of iron, and 2 of steel. The average mileage of 18 of the iron axles was 146,490 miles, and of the 2 steel axles 104,076 miles.

Of the 120 rails which broke, 79 were double-headed, 28 were single-headed, 9 were of the bridge pattern, and 3 were of Vignoles' section, and of 1 the section was not stated; of the double-headed rails, 37 had been turned; 73 rails were made of iron, and 47 of steel.

II.—Accidents to Passengers from Causes other than Accidents to Trains, Rolling-Stock, Permanent-Way, &c., and including Accidents from their own want of Caution or Misconduct; Persons passing over Level-Crossings; Trespassers; and Others.

Of the 121 persons killed and 206 injured in this division, 25 of the killed and 147 of the injured were passengers. Of these 15 were killed and 16 injured by falling between carriages and platforms; 2 were killed and 106 injured by falling on to platforms, ballast, &c., when getting into or alighting from trains; 4 were killed and 3 injured whilst passing over the line at stations; 8 were injured by the closing of carriage-doors; 2 were killed and 6 injured by falling out of carriages during the travelling of trains; and 2 were killed and 8 injured from other causes. 11 persons were killed and 7 injured whilst passing over railways at level-crossings, viz., 10 killed and 5 injured at public level-crossings, 1 killed and 1 injured at occupation-crossings, and 1 injured at a foot-crossing. 62 persons were killed and 30 injured when trespassing on the railways; 10 persons committed suicide on railways; and of other persons not specifically classed, but mostly private people having business on the Companies' premises, 13 were killed and 22 injured.

III.—Accidents to Servants in the Employ of Railway Companies or Contractors, which were caused by the Travelling of Trains or the Movement of Vehicles used exclusively upon Railways.

During the three months there were 139 servants of companies or contractors reported as having been killed and 470 injured, in addition to those included in Division I.* Of these 7 were killed and 91 injured whilst coupling or uncoupling vehicles; 3 were killed and 12 injured by coming in contact whilst riding on vehicles during shunting, with other vehicles, &c., standing on adjacent lines; 13 were injured whilst passing over or standing upon buffers during shunting; 10 were killed and 61 injured in getting on or off, or by falling off engines, wagons, &c. during shunting; 1 was killed and 30 were injured whilst breaking, spragging, or chocking wheels; 11 were killed and 14 injured whilst attending to ground points, marshalling trains, &c.; 2 were killed and 27 injured whilst moving vehicles by capstans, turn-tables, props, &c., during shunting, and 7 were killed and 32 injured by various other accidents during shunting operations; 2 were killed and 16 injured by falling off engines, &c., during the travelling of trains; 1 was killed and 6 were injured by coming in contact with over-bridges or erections on the sides of the line during the travelling of trains; 7 were killed and 26 injured whilst getting on or off engines, vans, &c. during the travelling of trains; 1 was killed and 16 were injured whilst attending to, or by the failure of, machinery, &c. of engines in steam; 32 were killed and 26 injured whilst working on the permanent way, sidings, &c.; 4 were killed whilst attending to gates at level-crossings; 38 were killed and 44 injured whilst walking, crossing, or standing on the line on duty; 4 were killed and 30 injured by being caught between vehicles; 2 were killed and 14 injured by falling or being caught between trains and platforms; 7 were killed and 3 injured whilst walking, &c. on the line on the way home or to work; and 9 were injured from various other causes.

Altogether, the numbers of persons killed and injured on railways in the United Kingdom in the course of public traffic, during the months of January, February, and March 1877, as reported to the Board of Trade, were as follows:—

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* For a classification of the injuries, see Table No. 6.

	Killed.	Injured.
Passengers:		
From accidents to trains, rolling-stock, permanent-way, &c. - - - - -	5	155
By accidents arising from other causes - -	25	147
Servants of companies or contractors:		
From accidents to trains, rolling stock, permanent-way, &c. - - - - -	3	35
By accidents arising from other causes - -	139	470
Persons passing over railways at level-crossings - -	11	7
Trespassers (including suicides) - - - -	72	30
Other persons not coming in above classification - -	13	22
Total - - - -	268	866

Note.—In addition to the above, the Railway Companies have reported to the Board of Trade, in pursuance of the 6th Section of the Regulation of Railways Act, 1871, the following accidents which occurred upon their premises, but in which the movement of vehicles used exclusively upon railways was not concerned, namely:—1 passenger killed and 15 injured whilst ascending or descending steps at stations; 11 injured by being struck by barrows, falling over packages, &c. on station platforms; 6 injured by falling off platforms; and 4 injured from other causes. Of servants of companies or contractors 1 was killed, and 93 were injured whilst loading, unloading, or sheeting wagons; 1 was killed and 25 were injured whilst moving or carrying goods in warehouses, &c.; 1 was killed and 29 were injured whilst working at cranes or capstans; 2 were killed and 39 injured by the falling of wagon-doors, lamps, bales of goods, &c.; 76 were injured by falling off, or when getting on or off, stationary engines or vehicles; 2 were killed and 34 injured by falling off platforms, ladders, scaffolds, &c.; 37 were injured by stumbling whilst walking on the line or platforms; 3 were injured whilst attending to stationary engines in sheds; 6 were injured by being trampled on or kicked by horses; 1 was killed and 33 were injured whilst working on the line or in sidings; and 21 were injured from various other causes. 7 persons who were transacting business on the companies' premises were also injured, making a total in this class of accidents of 9 persons killed and 439 injured.

TABLE No. 1.

General Total.

Number of Persons reported, during the Months of January, February, and March 1877, as Killed or Injured on the Railways of the United Kingdom, distinguishing between Passengers, Servants of Railway Companies, and Other Persons; and distinguishing also in the case of the Two former Classes between Accidents happening from Causes beyond their own Control, arising from Accidents to Trains, Rolling-Stock, Permanent-Way, &c., and Accidents happening otherwise.

—	Passengers.						Servants of Companies or of Contractors.						Other Persons.								Total all Classes.	
	From Causes beyond their own Control, arising from Accidents to Trains, Rolling-Stock, Permanent-Way, &c.		By Accidents from other Causes, including Accidents from their own want of Caution or Misconduct.		Total.		From Causes beyond their own Control, arising from Accidents to Trains, Rolling-Stock, Permanent-way, &c.		By Accidents from other Causes, including Accidents from their own want of Caution or Misconduct.		Total.		Whilst passing over Railways at Level Crossings.		Trespassers and Suicides.		Miscellaneous, not included in preceding Columns.		Total.			
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
England and Wales - -	5	144	23	138	28	282	3	31	114	408	117	439	10	6	52	23	11	16	73	45	218	766
Scotland - - -	–	6	2	7	2	13	–	4	20	57	20	61	1	1	17	5	2	6	20	12	42	86
Ireland - - -	–	5	–	2	–	7	–	–	5	5	5	5	–	–	3	2	–	–	3	2	8	14
Total for the United Kingdom	5	155	25	147	30	302	3	35	139	470	142	505	11	7	72	30	13	22	96	59	268	866

TABLE No. 2.

NUMBER of PERSONS reported, during the Months of January, February, and March 1877, as KILLED or INJURED in the UNITED KINGDOM by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon Railways, distinguishing between PASSENGERS, SERVANTS of RAILWAY COMPANIES, and OTHER PERSONS, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

		PASSENGERS.																						SERVANTS.																				OTHERS.								TOTAL ALL CLASSES.	
		From accidents to trains, &c. *See* Table No. 3.		From falling between carriages and platforms.		Falling on to the platform, bellast, &c. when Getting into or out of trains.		Whilst crossing the line at stations.		By closing of carriage doors.		Falling out of carriages during the travelling of trains.		Other accidents.		TOTAL PASSENGERS.		From accidents to trains, &c. *See* Table No. 3.		Whilst coupling or uncoupling vehicles.		Coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines.		Whilst passing over or standing upon buffers during shunting.		Getting on or off, or falling off engines, waggons, &c., during shunting.		Whilst breaking, spraging, or chocking wheels.		Whilst attending to Ground-points, marsh lights, &c.		Whilst moving vehicles by capstans, turntables, props, &c., during shunting.		Other accidents during shunting operations, not included in the preceding.		Falling off engines, &c., during the travelling of trains.		Coming in contact with over-bridges or erections on the sides of the line, during the travelling of trains.		When getting on or off engines, vans, &c., during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent-way, sidings, &c.		Whilst attending to Gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		Caught between vehicles.		Falling or being caught between trains and platforms.		Whilst walking, &c. along the line on the way home or to work.		Miscellaneous.		TOTAL SERVANTS.		Whilst passing over Railways at level-crossings.		Trespassers.		Suicides.		Miscellaneous.		TOTAL OTHERS.		Killed.	Injured.
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES -		5	144	13	15	2	99	4	3	-	8	2	5	2	8	28	292	3	31	3	74	3	11	-	10	7	51	1	29	9	13	2	26	6	29	2	14	1	6	4	20	1	16	2	21	3	-	36	42	3	24	2	12	5	2	8	117	439	10	6	43	23	9	-	11	16	73	45	218	766
SCOTLAND -		-	6	2	1	-	5	-	-	-	-	-	1	-	-	2	13	-	4	4	16	-	1	-	3	2	9	-	1	2	-	-	1	1	3	-	2	-	-	-	3	-	4	-	5	1	-	2	-	4	-	2	1	1	1	20	61	1	1	16	5	1	-	2	6	20	12	42	86
IRELAND -		-	5	-	-	-	2	-	-	-	-	-	-	-	-	-	7	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	1	-	1	-	1	-	-	-	1	5	-	-	3	2	-	-	-	3	8	14
TOTAL, UNITED KINGDOM		5	155	15	16	2	106	4	3	-	8	2	6	2	8	30	302	3	35	7	91	3	12	-	13	10	61	1	30	11	14	2	27	7	32	2	16	1	6	7	26	1	16	4	26	4	-	38	44	4	30	2	14	7	3	-	142	505	11	7	62	30	10	-	13	22	96	59	268	866

TABLE No. 3.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c., reported, during the Months of January, February, and March 1877, as having occurred on the RAILWAYS in the UNITED KINGDOM, distinguishing the different Classes of Accident, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED in each Class of Accident.

	ENGLAND AND WALES.							SCOTLAND.							IRELAND.							TOTAL, UNITED KINGDOM.						
	No.	Number of Passengers and others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and others.		Number of Servants.		Total all Classes.		No.	Number of Passengers and others.		Number of Servants.		Total all Classes.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
Collisions between passenger trains or parts of passenger trains	9	–	32	–	2	–	34	1	–	2	–	–	–	2	–	–	–	–	–	–	–	12	–	34	–	2	–	36
Collisions between passenger trains and goods or mineral trains, engines, and vehicles standing foul of the line	27	–	56*	–	9	–	65	2	–	1	–	2	–	3	1	–	–	–	–	–	–	30	–	57	–	11	–	68
Collisions between goods trains or parts of goods trains	3	–	–	–	3	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	3	–	3
Collisions between light engines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Passenger trains or parts of passenger trains leaving the rails	18	5	49	1	5	6	54	2	–	–	–	–	–	–	3	–	5	–	–	–	5	23	5	54	1	5	6	59
Goods trains or parts of goods trains, engines, &c. leaving the rails	9	–	–	–	1	–	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	11	–	–	–	1	–	1
Trains or engines travelling in the wrong direction through points	3	–	1	–	–	–	1	1	–	–	–	2	–	2	–	–	–	–	–	–	–	4	–	1	–	2	–	3
Trains running into stations or sidings at too high a speed	3	–	5	–	–	–	5	1	–	3	–	–	–	3	–	–	–	–	–	–	–	4	–	8	–	–	–	8
Trains running over cattle or other obstructions on the line	28	–	1†	–	1	–	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	30	–	1	–	1	–	2
Trains running through gates at level-crossings	11	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	12	–	–	–	–	–	–
The bursting of boilers or tubes, &c. of engines	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
The failure of machinery, springs, &c. of engines	3	–	–	–	2	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	2	–	2
„ „ tyres	147	–	–	–	–	–	–	12	–	–	–	–	–	–	3	–	–	–	–	–	–	162	–	–	–	–	–	–
„ „ wheels	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
„ „ axles	33	–	–	–	–	–	–	13	–	–	–	–	–	–	2	–	–	–	–	–	–	48	–	–	–	–	–	–
„ „ break apparatus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ couplings	1	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	–	–
„ „ ropes used in working inclines	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
„ „ tunnels, bridges, viaducts, culverts, &c.	–	–	–	–	–	–	–	1	–	2§	–	–	–	2	–	–	–	–	–	–	–	1	–	2	–	–	–	2
Broken rails	72	–	–	–	–	–	–	48	–	–	–	–	–	–	–	–	–	–	–	–	–	120	–	–	–	–	–	–
The flooding of portions of permanent way	8	–	–	–	2	–	2	1	–	–	–	–	–	–	2	–	–	–	–	–	–	11	–	–	–	2	–	2
Slips in cuttings or embankments	8	–	–	2	6	2	6	2	–	–	–	–	–	–	1	–	–	–	–	–	–	11	–	–	2	6	2	6
Fire in trains	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–
Fire at stations, or involving injury to bridges or viaducts	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Other accidents	6	–	2	–	–	–	2	2	–	–	–	–	–	–	–	–	–	–	–	–	–	8	–	2	–	–	–	2
	–	5	146	3	31	8	177	–	–	8	–	4	–	12	–	–	5	–	–	–	5	–	5	159	3	35	8	194

One of these persons was riding in a train of empty carriages unknown to the Company.

† This person was a platelayer's wife riding upon a trolley.

§ These were two men passing over a bridge in charge of a road locomotive.

TABLE No. 4.

ACCIDENTS to TRAINS, ROLLING-STOCK, PERMANENT-WAY, &c. on the Railways in the UNITED KINGDOM, reported during the Months of January, February, and March 1877, distinguishing the different CLASSES of ACCIDENTS, the different RAILWAYS on which the same have occurred, and the Number of Passengers and others, and of Servants of Railway Companies, KILLED or INJURED on each Railway by those Accidents.

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Collisions between engines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.	The failure of wheels.	The failure of axles.	The failure of break apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total all Classes	
																										Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES.																														
Cambrian	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	
Cornwall	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	
East and West Junction	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Festiniog	–	–	–	–	–	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Furness	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Great Eastern	–	1	–	–	3	–	–	2	4	6	–	–	6	–	1	–	–	–	–	3	–	–	–	–	–	–	5	–	–	5
Great Northern	1	2	–	–	1	–	–	–	3	–	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	14	–	7	–	21
Great Western	–	3	1	–	1	1	–	–	2	4	–	–	14	1	8	–	–	–	–	8	3	2	–	–	–	–	7*	–	3	–	10
Lancashire and Yorkshire	2	9	1	–	2	1	–	–	2	1	–	–	1	–	2	–	1	–	–	7	–	–	–	–	5	–	29*	–	4	–	33
London and North-Western	2	6	–	–	1	–	1	1	7	–	–	–	2	–	–	–	–	–	–	–	2	1	–	–	1	–	11	–	3	–	14
London and North-Western and Great Western Joint	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–
London and South-Western	–	1	–	–	–	–	–	–	–	–	–	–	1	–	3	–	–	–	–	11	–	–	–	–	–	–	2	–	–	–	2
London, Brighton, and South Coast	–	–	–	–	1	–	–	–	–	–	–	–	1	–	1	–	–	–	–	8	–	–	–	–	–	–	–	–	–	–	–
London, Chatham, and Dover	–	–	1	–	1	2	–	–	–	–	–	–	2	–	–	–	–	–	–	10	–	–	–	–	–	–	19	–	2	–	21
Manchester, Sheffield, and Lincolnshire	–	1	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	1	–	–	1	–	–	–	12	–	1	–	13
Metropolitan District	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–
Midland	2	–	–	–	1	–	–	–	2	–	–	–	5	–	3	–	–	–	–	14	–	1	–	–	–	–	12	–	–	–	12
Monmouthshire	–	–	–	–	–	4	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Northampton and Banbury Junction	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North-Eastern	1	3	–	–	3	–	–	–	3	–	1	–	–	–	3	–	–	–	–	3	–	2	–	–	–	5	26	–	9	5	35
North London	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–
North Staffordshire	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
North Union	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
Pembroke and Tenby	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Preston and Wyre	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Somerset and Dorset	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6	1	2	1	8
South-Eastern	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	1	2	–	2	1
Torbay and Brixham	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

* See notes to Table 3.

TABLE No. 4.—Number of Accidents to Trains, Rolling-Stock, Permanent-Way, &c.—*continued.*

NAME OF COMPANY.	Collisions between passenger trains or parts of passenger trains.	Collisions between passenger trains and goods or mineral trains, engines, &c.	Collisions between goods trains or parts of goods trains.	Collisions between engines.	Passenger trains or parts of passenger trains leaving the rails.	Goods trains or parts of goods trains, engines, &c. leaving the rails.	Trains or engines travelling in the wrong direction through points.	Trains running into stations or sidings at too high a speed.	Trains running over cattle or other obstructions on the line.	Trains running through gates at level-crossings.	The bursting of boilers or tubes, &c. of engines.	The failure of machinery, springs, &c. of engines.	The failure of tyres.	The failure of wheels.	The failure of axles.	The failure of break apparatus.	The failure of couplings.	The failure of ropes used in working inclines.	The failure of tunnels, bridges, viaducts, or culverts.	Broken rails.	The flooding of portions of permanent way.	Slips in cuttings or embankments.	Fire in trains.	Fire at stations, or involving injury to bridges or viaducts.	Other accidents.	Number of Passengers and others.		Number of Servants.		Total Class
																											Killed.	Injured.	Killed.	Injured.	Killed.
ENGLAND AND WALES—*continued.*																															
Whitehaven, Cleator, and Egremont	–	–	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	111	–	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
TOTAL, ENGLAND AND WALES	9	27	3	–	18	9	3	3	28	11	1	3	147	1	33	–	1	–	–	72	8	8	1	–	6	5	146	3	31	8
SCOTLAND.																															
Caledonian	–	1	–	–	2	1	–	–	1	–	–	–	8	–	4	–	–	–	–	16	–	1	1	–	–	–	1	–	2	–	
Glasgow and Paisley Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	
Glasgow and South-Western	–	1	–	–	–	1	–	–	–	–	–	–	3	–	–	–	3	–	–	2	1	–	–	–	–	–	–	–	–	–	
Glasgow, Barrhead, and Kilmarnock Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	
Great North of Scotland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	2*	–	–	–	
Highland	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	
North British	1	–	–	–	–	–	–	1	1	1	–	–	–	–	7	–	–	–	–	26	–	1	–	–	2	–	5	–	–	–	
Private Owners	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, SCOTLAND	1	2	–	–	2	2	1	1	2	1	–	–	12	–	13	–	3	–	1	48	1	2	1	–	2	–	8	–	4	–	
IRELAND.																															
Dublin, Wicklow, and Wexford	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	1	–	–	–	–	–	–	–	–	
Great Northern	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Great Southern and Western	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Midland Great Western	–	–	–	–	1	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	
Waterford and Limerick	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Waterford and Tramore	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
TOTAL, IRELAND	–	1	–	–	3	–	–	–	–	–	–	–	3	–	2	–	–	–	–	–	2	1	–	–	–	–	5	–	–	–	
TOTAL, UNITED KINGDOM	10	30	3	–	23	11	4	4	30	12	1	3	162	1	48	–	4	–	1	120	11	11	2	–	8	5	159	3	35	8	

* See notes to Table 3.

TABLE No. 5.

NUMBER of SERVANTS of RAILWAY COMPANIES and CONTRACTORS reported, during the Months of January, February, and March 1877, as KILLED or INJURED in the UNITED KINGDOM, by the TRAVELLING of TRAINS or the MOVEMENT of VEHICLES used exclusively upon RAILWAYS, distinguishing the Number which have occurred on each Railway or System of Railway, and classifying as far as practicable the Nature and Causes of the Accidents occasioning the Death or Injury.

NAME OF COMPANY.	From accidents to trains, &c. *See* Table No. 4.		Whilst coupling or uncoupling vehicles.		Coming in contact, whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		Getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst breaking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turn-tables, props, &c., during shunting.		Other accidents during shunting operations not included in the preceding.		Falling off engines, &c. during the travelling of trains.		Coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		Caught between vehicles.		Falling or being caught between trains and platforms.		Whilst walking, &c. on the line on the way home, or to work.		Miscellaneous.		TOTAL.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES.																																							
Brecon and Merthyr Tydfil	–	–	–	1																																	–	2	
Great Eastern	–	7	1	4	–	1	–	1	–	4	–	1	1	2	–	1	–	2	–	1	–	2	–	1	–	1	–	2	–	1	–	1	1	3	1	3	3	18	
Great Northern	–	3	–	11	–	5	–	2	–	10	1	7	–	1	2	2	–	7	–	2	1	3	1	5	–	2	4	7	1	–	–	3	1	2	–	1	1	1	1	7	25
Great Western	–	4	–	13	1	3	–	–	–	5	–	7	–	–	–	–	–	3	–	9	1	7	1	9	–	2	1	2	–	–	–	3	9	2	–	1	1	1	1	13	80
Lancashire and Yorkshire	–	3	–	10	2	–	1	2	2	9	–	4	1	1	–	14	2	2	–	1	–	5	–	2	–	1	1	1	–	–	–	5	4	–	2	1	2	–	1	8	67
London and North-Western and Great Western Joint	–	–	–	2											1																								3	3
London and South-Western	–	–	–	–						2	–	–	–	–	1	–																								7	5
London, Brighton, and South Coast	–	7	–	–						1	–	–	–	–	–	–																								3	14
London, Chatham, and Dover	–	2	–	–		1						1	–	–	–	–																								3	9
Manchester, Sheffield, and Lincolnshire	–	1	–	6	–	–	1	1	1	–	–	3	1	3	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	22
Manchester, South Junction, and Altrincham	–	–	–	–									1																										1	–
Maryport and Carlisle	–	–	–	–																																			1	1
Metropolitan	–	–	–	–																																			2	–
Midland	–	1	–	9		1		2		2		1	2	2		1																							14	39
Monmouthshire	–	–	–	1						2	–	–	–	–	–	–																								1	3
North and South Western Junction	–	–	–	–																																			1	–
North-Eastern	–	9	1	7	–	–	2	1	13	–	–	4	1	4	–	1	1	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	58
North Staffordshire	–	–	–	2					1	2	–	–	–	–	–	–																							2	6
North Union	–	–	–	–					1	–	–	–	–	–	–	–																							1	1
Rhymney	–	–	–	–					–	–	–	–	–	–	–	–																							–	1

[*Continued on next page.*

TABLE No. 5.—Number of Servants reported as Killed or Injured, &c.—*continued.*

NAME OF COMPANY.	From accidents to trains, &c.		Whilst coupling or uncoupling vehicles.		Coming in contact whilst riding on vehicles during shunting, with other vehicles, &c. standing on adjacent lines.		Whilst passing over, or standing upon, buffers during shunting.		Getting on or off, or falling off, engines, waggons, &c. during shunting.		Whilst breaking, spragging, or chocking wheels.		Whilst attending to ground-points, marshalling trains, &c.		Whilst moving vehicles by capstans, turn-tables, props, &c. during shunting.		Other accidents during shunting operations not included in the preceding.		Falling off engines, &c. during the travelling of trains.		Coming in contact with over-bridges or erections on the sides of the line during the travelling of trains.		When getting on or off engines, vans, &c. during the travelling of trains.		Whilst attending to, or by the failure of, machinery, &c. of engines in steam.		Whilst working on the permanent way, sidings, &c.		Whilst attending to gates at level-crossings.		Whilst walking, crossing, or standing on the line on duty.		Caught between vehicles.		Falling or being caught between trains and platforms.		Whilst walking &c. on the line on the way home, or to work.		Miscellaneous.		TOTAL.	
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES—*continued.*																																								
Somerset and Dorset	1	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
South-Eastern	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	9	1
Taff Vale	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	3	1
West London	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
TOTAL, ENGLAND AND WALES	3	31	3	74	3	11	–	10	7	51	1	29	9	13	2	26	6	29	2	14	1	6	4	20	1	16	26	21	3	–	36	42	3	24	2	12	5	2	–	8	117	439
SCOTLAND.																																								
Caledonian	–	2	1	5	–	–	–	1	–	2	–	1	1	1	–	–	1	–	–	–	–	–	3	4	–	–	–	1	–	–	1	–	–	2	–	1	–	1	–	–	7	21
Dundee East Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Glasgow and Paisley Joint	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
Glasgow and South-Western	–	–	2	1	–	–	–	1	–	–	–	–	1	–	–	1	–	–	–	1	–	–	–	–	–	–	1	–	–	1	1	–	–	–	–	–	–	–	–	5	6
Glasgow, Barrhead, and Kilmarnock Joint	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	2	–
Great North of Scotland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Highland	–	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
North British	–	–	1	9	–	1	–	1	2	7	–	–	–	–	–	–	–	2	–	1	–	–	–	1	–	–	1	2	1	–	–	–	–	1	–	–	–	1	5	26
TOTAL, SCOTLAND	–	4	4	16	–	1	–	3	2	9	–	1	2	1	–	1	1	3	–	2	–	–	3	6	–	–	4	5	1	–	2	1	–	4	–	2	1	1	–	1	20	61
IRELAND.																																								
Ballymena, Cushendall, and Red Bay	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Belfast and Northern Counties	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	1
Great Southern and Western	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–
Midland Great Western	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
Newry and Armagh	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	1
Waterford and Central Ireland	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–
TOTAL, IRELAND	–	–	–	1	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	1	1	2	–	–	1	–	–	–	5	5
TOTAL, UNITED KINGDOM	3	35	7	91	3	12	–	13	10	61	1	30	11	14	2	27	7	32	2	16	1	6	7	26	1	16	32	26	4	–	38	44	4	30	2	14	7	3	–	9	142	505

TABLE No. 6.

TABLE showing the different OCCUPATIONS of SERVANTS of RAILWAY COMPANIES and CONTRACTORS who were KILLED and INJURED during the Months of January, February, and March 1877, and classifying their INJURIES as far as practicable.

CLASS OF SERVICE.	Fatal.	Amputations.			Fractures.		Dislocations.	Crushes.			Scalds.	Sprains, Cuts, or Bruises.		Shaken.	Slight.	Unspecified Injuries to				Miscellaneous.	Total Injured.
		Legs or Arms.	Feet or Hands.	Toes or Fingers.	Legs or Arms.	Collar-bones or Ribs.		Legs or Arms.	Feet or Hands.	Body.			Severe.			Head.	Body.	Legs or Arms.	Feet or Hands.		
Breaksmen and Goods-guards	12	2	2	1	5	2	–	9	20	5	–	22	7	2	1	3	9	9	4	–	103
Capstanmen	1	–	–	1	–	–	–	1	1	–	–	1	–	–	–	1	–	3	–	–	8
Carmen	2	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	2
Carriage-cleaners	1	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	–	2
Carriage or Wagon examiners	2	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
Checkers	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
Chockers, Chain-boys, and Slippers	–	–	–	–	–	–	–	–	–	2	–	1	–	–	–	1	–	–	–	–	4
Clerks	2	–	–	–	–	–	–	2	–	1	–	–	–	–	–	–	–	–	–	–	3
Engine-cleaners	–	–	–	–	2	–	–	1	1	–	–	1	–	–	–	–	–	1	1	–	7
Engine-drivers	3	–	1	–	3	–	–	–	2	–	2	4	2	1	2	2	1	3	1	1	25
Firemen	4	–	3	–	–	–	–	1	13	2	5	9	2	3	1	4	–	4	2	–	49
Gatekeepers	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Greasers	2	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Guards, Passenger	4	3	–	–	1	–	–	–	3	2	–	6	5	4	3	3	2	–	1	1	34
Horse-drivers	1	–	–	–	4	1	–	–	–	4	–	1	1	–	1	–	1	–	–	–	13
Inspectors	3	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Labourers	7	–	–	–	2	–	–	–	–	–	–	3	1	–	1	1	–	2	1	–	11
Lampmen	2	–	1	–	–	–	–	1	–	1	–	1	–	–	1	–	–	–	1	–	6
Loaders and Sheeters	3	1	–	–	–	–	–	1	1	1	–	1	–	–	–	–	–	1	–	–	6
Mechanics	4	–	–	–	–	–	–	–	1	–	–	1	–	2	–	–	–	–	1	–	5
Messengers	1	–	–	–	–	–	–	–	–	–	–	1	–	1	–	1	–	1	–	–	4
Number-takers	2	–	–	–	–	–	–	–	2	–	–	2	–	–	–	–	–	–	1	–	5
Permanent-way Men	36	1	–	–	4	3	–	1	5	–	–	2	3	4	3	4	1	2	–	–	33
Pointsmen	3	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	3
Policemen	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	2
Porters	21	1	–	1	3	1	2	1	28	10	–	13	3	2	–	–	4	4	4	–	77
Shunters	7	–	–	1	3	–	–	7	11	5	–	11	2	2	1	2	5	4	6	–	60
Signal-fitters	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Signalmen	5	–	1	–	–	1	–	–	–	–	–	–	–	1	1	1	–	–	–	–	5
Station Masters	1	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–	–	2
Ticket-collectors	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
Watchmen	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	2
Yardsmen	1	–	–	–	–	–	–	1	2	1	1	4	–	–	–	1	–	–	–	–	10
Miscellaneous	1	–	–	–	–	–	–	–	–	–	–	3	1	–	–	1	2	2	–	–	9
Contractors' Servants	5	–	1	–	2	–	–	–	1	2	–	1	–	–	–	–	2	–	–	–	9
TOTAL	142	9	9	4	31	9	2	26	93	41	8	91	29	22	15	26	27	38	23	2	505

TABLE No. 7.

NUMBER of PERSONS reported during the months of January, February, and March 1877 as having been KILLED or INJURED, whilst upon the COMPANIES' PREMISES, by ACCIDENTS in which the MOVEMENT of VEHICLES used exclusively upon Railways was not concerned, distinguishing between PASSENGERS, SERVANTS of COMPANIES, and OTHER PERSONS, and classifying as far as practicable, the NATURE and CAUSES of the ACCIDENTS occasioning the DEATH or INJURY.

—	PASSENGERS.										SERVANTS.																						Persons on business at stations.		Total all Classes.	
	Whilst ascending or descending steps at stations.		Struck by barrows, falling over packages, &c., on station platforms.		Falling off platforms.		Other accidents.		Total.		Whilst loading, unloading, or sheeting wagons.		Whilst moving or carrying goods in warehouses, &c.		Whilst working at cranes or capstans.		By the falling of wagon-doors, lamps, bales of goods, &c.		Falling off, or when getting on or off, stationary engines or vehicles.		Falling off platforms, ladders, scaffolds, &c.		By stumbling whilst walking on the line or platforms.		Whilst attending to stationary engines in sheds.		Being trampled on or kicked by horses.		Whilst working on the line or in sidings.		Miscellaneous.		Total.					
	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
ENGLAND AND WALES -	1	15	–	10	–	6	–	4	1	35	1	92	1	25	1	27	2	37	–	76	2	33	–	37	–	3	–	6	–	32	–	21	7	389	–	7	8	431
SCOTLAND - -	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	2	–	2	–	–	–	–	–	–	–	–	–	–	1	1	–	–	1	6	–	–	1	6
IRELAND - - -	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	2
TOTAL FOR THE UNITED KINGDOM - -	1	15	–	11	–	6	–	4	1	36	1	93	1	25	1	29	2	39	–	76	2	34	–	37	–	3	–	6	1	33	–	21	8	396	–	7	9	439

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BRISTOL PORT RAILWAY.

Board of Trade,
(Railway Department,)
13, *Downing Street, 9th April* 1877.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 5th ultimo, the result of my inquiry into the circumstances connected with the fatal accident which occurred on the 24th February, at the Shirehampton station, on the Bristol Port Railway and Pier Company's line.

In this instance a young man named Robert Thomas Oliver Davey was attempting to enter a railway carriage as the special train was in the act of being shunted back to the platform, when he fell between the platform and carriages, was grievously injured, and died as he was being conveyed by the next up train to the Clifton station.

On the day in question the Avonmouth New Docks were publicly opened for traffic, and large numbers of persons travelled by the Bristol Port Railway from Clifton to Avonmouth.

The Bristol Port Railway is a single line of railway $5\frac{3}{4}$ miles in length, with stations at Clifton, Seamills 2 miles from Clifton, Shirehampton 3 miles 50 chains from Clifton, and Avonmouth. There is a loop siding at Shirehampton station, which is about 215 yards in length, but only one platform situated at the side of the up line, and which platform is about 80 yards in length.

When this line was opened for traffic in 1865, the railway company gave an undertaking to the Board of Trade that there should be only one engine in steam between Clifton and Shirehampton stations; and similarly, only one engine in steam between Shirehampton and Avonmouth stations; but by some oversight the railway company were not required to put up a second platform at the side of the down line, for down trains to stand alongside of on the loop siding, in accordance with the usual practice of the Board of Trade, as regards passing places on single lines; and in consequence when the railway company are working an up and a down train on the line between Clifton and Avonmouth stations, the up train is first brought to a standstill alongside of the up platform at Shirehampton station, and the down train passes along the down loop line, and on to the single line on the Avonmouth side of Shirehampton station, and stops and waits there until the up train has quitted the station for Seamills and Clifton stations; and then, after the facing points at the end of the loop line have been shifted and set right for the up line, the down train is signalled, and is shunted back until it is alongside of the up platform.

On the day in question the special down train was in the act of shunting back to the up platform when the accident took place.

Mr. Davey, the father of the young man who was killed, in his letter to the President of the Board of Trade, dated the 28th February, stated that the train for which his son took a ticket from Shirehampton station on the 24th February for Avonmouth started from Clifton Downs station, which is at the eastern end of the Clifton Extension Railway, which line has not been authorised to be opened for passenger traffic by the Board of Trade; but Mr. Davey appears to have been misinformed in this respect, as the train started from the Clifton station of the Bristol Port Railway. The Great Western Railway Company, however, lent the Bristol Port Railway and Pier Company a certain amount of rolling stock, which passed along the Clifton Extension to the Bristol Port Railway, to enable it to meet the exigencies of the traffic on the occasion of the opening of the Avonmouth Docks, and the special train in question was borrowed from the Great Western Railway Company, but the ordinary traffic on this line is carried on by one train working to and fro between Clifton and Avonmouth stations; and it is only at holiday times, or on such occasions as the opening of these docks, that two trains are on the line, moving in opposite directions, at one and the same time.

Mr. Davey appears to have laboured under the impression, that his son's death was caused by some misconduct on the part of some of the Company's servants, and their unnecessary interference with his son, and two of the witnesses who were examined, were called by him, as they had come forward in consequence of advertisements which Mr. Davey had put forth, for the purpose of ascertaining how the occurrence had taken place. These were Walter Moore and Richard Garscomb.

The evidence is as follows :—

Wm. Miller, locomotive superintendent of the line since it was first opened, states "that he was in charge "of the special train by which Mr. Davey met with "the accident: that the train consisted of a tank "engine, nine carriages, and two break-vans with "two guards, and the vans were placed at the extre-"mities of the train: that the train started from the "Clifton station of the Bristol Port and Pier Rail-"way about 3.25 p.m.: that the engine and all the "carriages belonged to the Great Western Railway "Company, who had lent them for the day: that "there were a large number of people at the Clifton "station, and he thinks that the train was pretty full "of passengers, but as he was in charge of the engine "he could not speak positively as to the number of "passengers: that they did not stop at Seamills "station: that the ordinary mode of working is to "leave the staff at Shirehampton station, and under "ordinary circumstances only one engine is used for "working the traffic: that when two engines are "used on extraordinary circumstances, such as that "on the 24th February, the up train from Shire-"hampton to Clifton takes the staff and brings it "back to Shirehampton: that they do not use tickets "at all, and when the train from Clifton reaches "Shirehampton the staff is given up to the up train "to Clifton: that, on the day in question, he took "this special train along the down loop line, and "stopped on the single line beyond the bridge; an "up train was then standing alongside the platform, "and the staff was handed over to the guard, who "handed it to the driver: that he got a hand signal "from James Trebbel to push his train back along-"side of the platform, and did so very slowly, as "there is a curve of about 28 chains radius, and a "rising incline of 1 in 100: that a heavy train could "not be pushed back very fast, not more than five or "six miles an hour, on account of the short distance "they had to run: that James Trebbel signalled him "to stop: that he thinks there might be 90 or 100 "persons on the platform: that it was not half full "of people, and that at the time when the accident "happened the train was not moving at a greater "rate than two miles an hour, and it was stopped "in about a carriage length: that the train was "being stopped to take up and set down passengers "at Shirehampton, and to collect tickets: that the "accident occurred either at 3.25 or 3.35, but he is "not certain which: that he was not driving himself, "and he stood on the platform side of the engine and "noticed all the signals: that he was looking back "as they set back towards the station: that he did "not observe any doors of any of the carriages opened "either by passengers in the train or by persons on "the platform, and that it was a fine day: that after "the accident happened he ran to the person who

" had been injured, and who was being brought into " the office, and asked him 'How did this happen?' " He answered 'he caught hold of the handle, or " attempted to catch hold of the handle, and slipped " and fell:' he was perfectly sensible when he made " this reply: that he was being taken towards Clifton " station, but died before he got there: that the " accident occurred while the engine break was on, " and the train was in the act of being pulled up: " that he does not know whether the guards' breaks " were being put on or not: he did not see either of " the guards as they were setting back: that there " were four extra men on the platform to assist in " keeping order, platelayers and carpenters, who had " been used to do the same work on extraordinary " occasions: they were not in uniform, and they " could not be distinguished from other persons " except by their conduct: that he sent for a doctor " immediately the accident happened, and for brandy: " that he does not know who was present when the " conversation with Mr. Davey took place."

James Trebbel, permanent-way man, states " that he " was at the Shirehampton station at the time the acci- " dent occurred: that he was assisting to collect tickets " and to signal the train back: that he does not know " the time when this particular train reached Shire- " hampton: that when it arrived, there was an up " train standing alongside the platform, and he assisted " to collect the tickets from that up train: and when " the up train had departed, and was clear from the " platform, he signalled to the down train to set back " alongside of the platform: that the north-western " end of the platform was clear of persons, but there " was a good few on the other part of the platform: " that the train set back in the usual way, and he " signalled it back with his hand: he could not say, " as he was at the lower end of the platform, whether " there was any rush towards the doors of the " carriages: that the only door of any of the carriages " that was open as the carriages passed him, was " that in which the guard in the rear van was riding: " that he did not see the accident occur, but he heard " a shout and observed the rear guard hold up his " hands as a signal for the train to stop: that the " train was going very slow at the time, as the train " was within three or two carriage lengths of its " destination: that he did not see anyone fall, but he " signalled immediately for the train to stop: he " does not know at what time it occurred: that he " did not assist to carry the person who was hurt " into the office: that the train stopped in about a " carriage length after it was signalled to stop: that " he has at two or three different times, at holiday " times, done the same work before: that there were " three besides himself on the platform at the time: " that they were told to keep people back while the " train was being backed alongside of the platform: " that there were two guards besides the four plate- " layers on the platform: that he did not see either " of the guards get out on to the platform as the train " was setting back, but the rear guard was on the " platform and held up his hands before the train had " actually stopped: that he did not see any door of " any carriage open when the guard held up his " hands for the train to stop: he thinks he might " have seen if any door was at that time open: he " could not say whether there was any rush of persons " to the carriages: that he had cleaned himself up, " and was in his pilot suit: that if the people did " make a rush, he did not see it: that some of the " carriages were more than ordinarily full, and some " were not: some persons were standing up in the " carriages, as there was not room for them to sit: " that as he was at one end of the platform, and the " line is on a curve, he could not see whether there " was any of the doors of the carriages open at the " other end of the platform: that he thinks there " were more people present on this occasion than on " any other at which he has been present: that the " people were standing up in the trains which were " returning from Avonmouth, but not in those going " to Avonmouth, at least he did not see them: that " he does not know that anyone was obliged to walk " back from Shirehampton for want of room in the " carriages."

Eliel Warren, of Shirehampton, blacksmith, states " that he was at the station for three or four hours, wait- " ing on the trains for his wife to come from Clifton: " that he saw the down train backing towards the " station platform, and the person who was injured " slipped off the platform, and he ran to stop the " engine: that he had not noticed him before he saw " him drop, more than he noticed the others: that " he should not think there were 100 people on the " platform, and he did not see any carriage door " open as the train set back: that there was no par- " ticular rush of the people on the platform towards " the carriages in that train; but he did not notice " particularly the person who was injured: that he " asked permission to open some doors in the next " down train, but was told by the people inside the " carriage that there was no room: that Mr. Miller " asked him to go for the doctor, but he did not assist " to move Mr. Davey into the office: that he went " into the office where he was, and asked his name; " he gave his name Davey, Bath Road: that he " asked him to move his leg, and he moved his right " leg: that he did not ask, nor hear him asked, how " the accident happened: that he did not notice the " guard of the train jump out, but Mr. Davey asked " him to get a fly, and he then went for the doctor " by Mr. Miller's direction: that the train was " backed in the ordinary way and stopped almost in " a moment: it stopped very sharp, not a quarter of " a minute stopping: that he saw more than half a " dozen up and down trains at the station while he " was waiting for his wife, who did not come, as she " did not like the crowd: that all the trains from " Clifton were crowded: that he cannot say whether " there were any people standing up in this particular " down train: but in several trains people were stand- " ing up; he could not say whether it was for want " of room, or intending to get out: that he does not " know that any people walked home from Shire- " hampton, and that the doctor was not at home.

Walter Moore, passenger in the train by which Mr. Davey was injured, states " that he was on the " platform at Shirehampton station waiting before the " down train set back towards the platform: that as " he was standing on the platform he saw Robert " Davey, who he did not previously know, making " towards one of the carriages, he believes it was a " 1st class, and when he got near the carriage the " guard who was travelling with that train, but who " had got out on to the platform, pushed him back " from the front of the platform towards him, who " was standing further back on the platform: that " the train was in motion at that time, and when " (after looking back on the platform for two of his " friends) he turned round towards the carriages he " saw that Robert Davey was down between the " carriages and the platform: that he did not see him " fall: that Davey was about two feet in front of him, " and he was about four feet from the edge of the " platform: that Davey was between him and the " carriages: that he and Davey and the guard were " all walking back as the train was being pushed back " slowly: that he saw the guard push Davey back " from the carriages towards him: that if he had " been acting as guard he would have held Davey " back and have kept him from falling: that he does " not know whether Davey attempted to get on to " the step of the carriage or not, and he does not know " how the accident occurred: that he is not certain " whether any doors of the carriages were open or " not: that the carriages were full, but he could not " say whether any people were standing up in them: " that he thinks there were between 40 and 50 persons " on the platform: that he did not see any pushing:

" that he assisted to pull out Robert Davey and in " carrying him into the waiting room : that he heard " Davey say, as he was being pulled up from between " the platform and the carriages, ' Lord, have mercy,' " but could say no more : that he did not hear him " speak in the office or waiting room : that he did not " see Mr. Miller there, and does not know who he " did see there, as he was quite overcome by the " shock : that he heard the doctor ordered to be sent " for, and the guard asked him to go for some brandy, " but he had no money with him : that as soon as he " and his friends had placed Davey in the waiting " room he was ordered to turn out, but he does not " know who gave the order : that he did not see the " rear guard get out : that Davey rebounded from " him." This witness identified guard Lewis as the company's servant who pushed the deceased from the edge of the platform.

Richard Garscomb, 10, Avon Vale, Clifton, states, " that he was at the Shirehampton station, waiting " for the down train which caused the accident as " it was shunting back : that he thinks there were " about 50 persons on the platform ; there might be " more or might be less : that he noticed the train " being shunted back in the usual way, and he " noticed one of the carriage doors open about the " centre of the train, which subsequently struck " Robert Davey, but is not certain ; he could not say " whether it was opened by some one inside or not : " that he saw the accident occur : that the person " who was injured, Robert Davey, made attempts to " get into a carriage as it was going back, and one " of the servants of the company pulled him back : " that he could not say whether he had hold of the " handle of the door of a carriage or not, but believes " that he was walking on the platform when he made " the first attempt : that he tried a second time, but " he could not say whether the person had hold of " the handle of the door, but he believes he was not " on the step of the carriage : that he observed the " servant of the company pull him back a second " time, and then he stumbled forward and rolled " between the platform and the carriage : that he " does not know whether it was a 1st, 2nd, or 3rd " class carriage, but there was a door wide open in " it, and it struck the deceased in the back : he could " not say whether it was full of people or not : that " the servant of the company was acting for the best " in keeping the person away from the carriages, " which were going very slow at the time he fell " between the platform and the carriages : that he " thought the servant of the company was pressing " the person, Robert Davey, away from the carriages, " and it was the blow from the door of the carriages " and the pull from the servant of the company " caused him to fall ; the blow from the door knocked " him off the platform : that the door of the carriage " was open before Robert Davey got to it : that the " carriages were pretty full, and he stood up in going " to Avonmouth : that he heard Robert Davey say, " ' Lord, have mercy,' before he was taken into the " office : that he was about five feet from the train " at the time of the accident : that Walter Moore " was between him and Robert Davey : that he was " looking towards Avonmouth : that he was standing " still : Walter Moore to the right was standing still : " Davey was standing still before the first time that " he attempted to get into the train : that the servant " of the company was moving with the train : that " Davey tried two different doors : he was near " enough to touch the doors, but he does not know " whether he touched them or not : Davey was in " front of the porter : they did not move so fast as " the train : that he could not say by which hand he " took hold of Robert Davey the first time, but used " both hands on the second : that he could not say " whether the porter pushed Davey forwards, as the " train was going, or sideways away from the edge " of the platform : that the door was wide open at " right angles : that he is certain there were two " pulls : he caught him round the body, but he does " not know whether he pushed him forward or side- " ways." This witness could not identify the company's servant who pushed the deceased from the carriages.

George Lewis, porter eight years, acting as guard on the 24th February, states, " that he rode in the " rear van, and the train left Clifton station at half- " past three o'clock : that it consisted of nine carriages " and two break vans : that the carriages were not " quite full, and there were no passengers in the " guard's van : that this was a special train, and it " did not stop at Seamills station : that the train " reached Shirehampton about 5 or 10 minutes before " 4 o'clock ; it ran past the station and was called " back, and he was in his van as it was called back " very slowly : that he did not get out until the train " was slowly stopping, when he heard there was " something the matter : that he was looking out as " they went back all the way, and when he heard " people calling out ' Stop !' he put on his break im- " mediately and got out, and then he saw that a man " had fallen between the platform and the carriages : " that he got out just before the train came to a stand- " still : that he cautioned the people out of the window " of his van to keep clear, but he did not push any " of them back from the edge of the platform, as it " was impossible for him to do so : there were no " doors of any of the carriages open as the train was " backed to the platform : when the man was pulled " up, there was a door wide open and pushed back " against the carriage, but he does not know who " opened the door of that carriage : that he did no " see any persons take hold of the man who was " injured and try to push him aside, and he does not " think he could have seen it if anyone had done so : " that there might be 50 or 60 people on the plat- " form : that he told the coroner there might be from " 100 to 150 on the platform : that he did not see the " man actually fall : there was an outcry on the plat- " form : that the people made such a rush, and that " prevented him from seeing the accident : that the " man was close under the door which was open ; it " was not open as they set back ; it was opened when " the rush took place, when the accident took place : " that he picked up a ticket from the platform, but " did not take any from the deceased person ; he " thought it was from Shirehampton to Avonmouth, " and he tore it up : he did not receive it from any " person."

Richard Nesbitt, clerk in the Liverpool, London, and Globe Insurance Co., states " that he was waiting " at Shirehampton station to go to Avonmouth by " the train which caused the accident : that he ob- " served it setting back towards the platform at the " usual pace, but slow : did not observe any doors of " the carriages open in the train : saw the guard " Lewis first at the window of the van : did not see " him get out on to the platform : that he saw Robert " Davey take hold of the handle of the door, and " that the door swung back ; a first-class carriage " near the tail of the train : did not observe whether " Robert Davey attempted to get on to the step of " the carriage, and when the door swung back " upon him he dropped down between the platform " and the carriage : that he saw him drop : that he " cannot say whether any guard was near at the " time : that the carriages did not move very far, not " more than about a carriage length, after the man " dropped between the carriage and the platform : that " the people did rush towards the carriages, and he " thinks there might be between 50 and 100 persons " on the platform : that he did not see any person " open any of the carriage doors, and he does not " know that Robert Davey opened the door : that " he thinks he was about six yards from where the " man dropped : did not see anyone push him, and " he thinks he must have seen if anyone had pushed " him twice : that he did not see any door open

" which could have struck the deceased in the back " and knocked him down: that he saw the guard " looking out of the window as the train passed him, " and did not see him get out of his van before the " accident occurred: that if the guard had walked " along the platform and pushed the deceased he " must have seen him: that there might have been " time after seeing the guard at the window for him " to get out of the van and meet Davey before the " latter fell down: that some of the carriages were " very full, but he walked to Shirehampton."

George Fielding, clerk to Mr. Barnett, Bristol, states "that he was at the station waiting for the " train, and saw it set back towards the platform, " and there were not any carriage doors open as it " set back: saw the accident happen: that he was " on the Clifton side of Robert Davey immediately " before it occurred: saw that he took hold of the " handle of the door before it was opened, 1st-class " carriage; cannot be sure as to its position in the " train, and saw him turn the handle (the train was " in very slow motion at the time) while he was " standing on the platform walking slowly in the " same direction as that in which the train was " going: the door then came open and he heard a " slip, and he, Robert Davey, then fell, and he saw " him drop between the platform and the carriage; " thinks he was not struck by the door; saw no one " attempt to keep him back from the carriage: did " not see any guard at all at the time, and has never " seen the guard of the train (Lewis) to recognise " him before to-day: that he, the guard, was not " standing near Robert Davey when he fell: that he " does not think anyone pushed Robert Davey, as " he must have been pushed also at the same time: " there were no doors open as the train was being " pushed back: that he believes there were other " doors open while Robert Davey was engaged in " opening the door: that he did not notice any servants " of the company keeping people back: heard some " one calling out; it might have been from the " carriages to keep back: did not know the deceased."

This special train lent by the Great Western Railway Company consisted of an engine, 2 break-vans, 6 third class, 2 second class, and 1 first class carriage, making up the total number of vehicles to 10, and which formed a length of train, independent of the engine, of 282 feet; deducting the length of the break-vans, would leave the length of the passenger carriages about 228 feet; the length of the platform, as already stated, being about 240 feet, while that at Seamills station is only 153 feet. The ordinary train usually consists of about five vehicles, but on this day the second train which was running on the line while the pressure of traffic existed, consisted of 12 vehicles, except in two instances when it amounted to 16 vehicles.

The height of the platform at Shirehampton is three feet above the line of the rails, while that of the iron step opposite the doors of the carriages is about 3 feet 1 inch above the line of the rails, and the outside edge of this step is about 4 inches from the edge of the platform, the sides of the carriage being about 10 inches from the edge of the platform.

I endeavoured to ascertain from the general manager of the line (Mr. Wilkinson) what was the number of tickets issued for this particular train, but he was unable to supply this information. He has, however, given me the returns, by which it appears that the following number of fares were taken on the 24th February at the several stations on the line, viz.:—

	Single Tickets.	Return Tickets.	Money received.
			£ s. d.
Clifton Station -	1,829	2,270	161 9 8½
Seamills Station -	189	26	4 7 5
Shirehampton Station -	1,313	20	20 0 0
Avonmouth Station -	2,640	None	66 14 1

The Great Western special train ran nine trips from Clifton to Avonmouth, and seven trips from Avonmouth to Clifton.

The other train ran 12 trips to and 11 trips from Avonmouth, including the ordinary day trains.

After a careful consideration of the whole of the preceding evidence, and also after a perusal of that given at the coroner's inquest, which was placed before me by the company's solicitor (Mr. Parr), I have arrived at the conclusion that the accident was solely due to the want of caution exercised by the deceased Mr. R. T. P. Davey, and that it was not due to any impropriety of conduct on the part of any of the railway company's officers or servants.

On such occasions the railway company's officers and servants have very arduous and anxious duties to perform, in trying to provide for the safety of an excitable and uncontrollable body of people, pushing and rushing towards the carriages in the endeavour to secure seats, and, as far as my observation goes, they endeavour to perform those duties in a satisfactory and proper manner.

This fatal accident would not in all probability have occurred if the carriages of the train had all been fitted with continuous foot-boards at the height of the iron steps opposite to each carriage door.

In my opinion there is no good or sufficient reason why these continuous foot-boards should not at once be substituted for the short foot-boards or iron steps now provided nearly on the line of the floors of all carriages. I am quite aware that accidents will still continue to happen from persons attempting to get into or out of these carriages, although they may be thus fitted with continuous foot-boards, but the accidents would probably be of a far less serious nature than those which result from persons falling between the carriages and the platform while the carriages are still in motion.

The inquiry into this accident has pointed out the necessity for an additional platform on the down loop line at Shirehampton station; and it is also apparent that the length of the platforms at all the stations on the line is insufficient for the length of the trains which are run on holidays, and on similar occasions to the opening of the new docks at Avonmouth.

I have, &c.,

W. YOLLAND,
Colonel.

The Secretary,
Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th April.

CALEDONIAN RAILWAY.

Board of Trade,
(Railway Department,)
13, *Downing Street, London, S.W.*
21st February 1877.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 8th instant, the result of my inquiry into the circumstances connected with the collision which occurred on the 7th inst., at Carstairs west siding, on the Caledonian Railway.

In this case the 5.15 a.m. passenger train from Carlisle to the North came into collision with a special mineral train as it was leaving Carstairs west sidings for Shieldmuir.

One passenger and the driver and fireman of the passenger train were slightly injured.

In the passenger train the smoke box and some of the steam pipes of the engine, and four vehicles were damaged.

In the mineral train five waggons were knocked off the rails, and three of them broken up.

On the west (or Glasgow) side of Carstairs station there is a group of sidings on the down side of the down line, the connections of which with the down line are worked or controlled by interlocked levers in the signal cabin called the Carstairs west siding cabin. The spot at which this collision occurred is about 440 yards west of the signal cabin where the westernmost connection of the sidings with the down line takes place. The levers for working this connection are contained in a ground dwarf frame close to the points. This frame contains four levers: one for ringing a gong in the signal cabin, asking permission to use the sidings, the signalman replying (if ready) by pulling over a lever in the cabin, which lever locks at danger the down home and distant signal levers (these signals are respectively about 100 and 500 yards east of the cabin), and unlocks (by pulling a wire) the levers in the dwarf frame. The breaksman using the dwarf frame then pulls the second lever, which locks at danger the down home signal near the signal cabin, and works a disc in the cabin; he next opens the siding points with the third lever, and with the fourth lowers the siding signal, which signal is also controlled by a lever in the cabin. As soon as the train has passed out of the siding, the breaksman restores the levers, and gives one beat on the gong to the signalman, who then locks the points. It will be seen from the above description that if the apparatus is in good order, and the rules are attended to, nothing can well go wrong.

The evidence is as follows:—

1. *William Morrison*, signalman about four years, in Carstairs west siding cabin since January 1875.—I came on duty at 7 a.m. for a 12-hours shift. When I came on duty, the mineral train was already in the sidings, and the signal was lowered for this train to pass on to the down end of the sidings, and it went down soon after. An engine and van then passed along the down main line going to Muirkirk, through Silvermuir junction; and on getting "line clear" from Silvermuir junction I lowered my home and distant signals for the 5.15 a.m. passenger train from Carlisle, which had been signalled on from the station while the engine and van were "on line." I put back both distant and home signal levers as soon as the train had passed, and the home signal went back to danger after having been properly off. The next thing that drew my attention was a movement in the wires below the cabin; and on looking down the line, I saw the passenger train standing near the dwarf frame. Not any movement whatever had taken place between the dwarf frame and my cabin since 6.55 a.m. when I had allowed a mineral train to pass on to the down line. I had at that time pulled over the siding lock lever, and lowered the siding signal, but I did not notice whether the disc working from the siding was or was not turned in the cabin. I put back the siding signal and then the lock lever as soon as I saw the train was clear of the points; this would be about 6.55 a.m., the mineral train, which met with the collision, passing down about 7.17 or 18. A goods train passed down on the main line after the mineral train, and before the engine and van. It is a mystery to me how the mineral train that came into collision could have got out. I am quite sure the siding signal went back to danger after the mineral train left the siding at 6.55 a.m. I saw both the light and arm. Nothing ever went wrong before with this frame that I am aware of, though the disc in the cabin does not always work properly. The first thing the man at the siding has to do is to take the slot off my home signal; and I cannot tell how this was working after the departure of the 6.55 a.m. mineral train. I never told breaksman Robb that the gong was disconnected, but I might have told him it would not ring properly, though I don't remember doing so. The gong is very seldom used by the breaksmen when they are going away.

2. *John Brown*, signalman since September last.—I came on duty at 6 p.m. on the 6th, to remain till 7 a.m. on the 7th. Morrison drew the bolt and signal for the mineral train to leave at 6.55 a.m. The gong had been rung twice for this train, and I rang back, but the return gong was not ringing, I believe. The indicator in the cabin was working properly, but I could not say whether it was turned off when the mineral train went away, as I was just leaving the box at the time. The gong had been working ever since I had been in the cabin. All the guards so far as I am aware used the gong before getting leave to go out. Guard Robb had always rung the gong, or tried to ring it, when I have been on duty.

3. *James Robb*, mineral breaksman, 2½ years.—I made up my train at Carstairs for Shieldmuir; it consisted of 20 waggons of iron ore, ten empties, and a van. When we were ready we drew down to the end of the loop, and remained there some 20 minutes, while two goods trains and an engine and van passed along the main line. As soon as the engine and van had passed, and would be, I thought, clear at Silvermuir, I went to look at the bolt-lock, and found it drawn. The gong was not in good working order at this time. I then pulled the lever locking the down home-signal, then the point lever, and then the siding signal lever. This signal came off a little bit, about half the breadth of itself, as much as I have seen it come many times. The driver then moved out, and the engine and three waggons went clear on to the main line, when the passenger train came up and struck the 6th or 7th waggon from the engine, and I and the frame were all sent down the bank. I was not hurt. My train was slipping badly, and must have been five minutes in coming out after I had lowered the signal, so that the passenger train could not have been near the home signal when I put the lever locking it into the position of danger. It was gray daylight at this time, and I did not notice how the home signal was standing. The gong had been out of order about eight months since, and I had never pulled the gong lever since, the signalman (Morrison) having told me it was disconnected. I did not see the passenger train coming till it was among the waggons. I never had a copy of the appendix to the rules. (This appendix contains the rules for working this siding connection.)

4. *David Masterton*, driver five years.—I was in charge of a mineral train from Carstairs to Shieldsmuir. After making up our train in the sidings we drew down to the west end of the loop, and stood there about 20 minutes before we got a chance of going out. I then told the breaksman he had better see whether the bolt was drawn. The gong communication was not in working order, and had not been for three or four months; and after the collision, signal repairer Gowan told me that the wire had been detached from the gong, as it interfered with the block working. I asked him how this could be, and he replied that he had orders to disconnect it. Robb then opened the points, and lowered the siding signal; this had never dropped properly, and moved down on the present occasion as far as usual. I had never reported this siding signal as not working properly. I did not notice the down home signal. I then moved out, and was four or five minutes in doing so, as my engine was slipping a good deal. The passenger train had almost run into my train before I noticed it coming. I had just time to step off, as well as the fireman and the breaksman. I shut off steam before doing this.

5. *William Bryce*, fireman three years.—I agree with the driver's evidence.

6. *James Gray*, driver 24 years.—I joined the 5.15 a.m. train at Carlisle, and started at 5.30 a.m., leaving Carstairs at 7.25, 20 minutes late. The distant signal from Carstairs west siding was off, and shortly after I saw the home signal, which was also off, and remained off till I was past it. I saw nothing of the waggons in my road till 40 or 50 yards off, it being gray daylight. My speed at this time was about 12 or 14 miles an hour. I had just time to shut the regulator, and my fireman applied the chain break attached to some of the carriages, but our speed was hardly affected. I jumped off, and also the fireman. I fell down and hurt my left leg, and was off duty 12 days. I did not notice the position of the siding signal. I am quite sure the home signal was off. I did not assume that it was so because I saw the distant signal off.

7. *Arthur Reay*, fireman six years.—On leaving Cartairs I saw the down distant signal off; the home signal was also off, and remained off till we were past it. I saw the waggons on the main line when passing the van of the mineral train. Our speed was then 12 to 15 miles an hour. I put the chain break on, and then my tender break a little, and then jumped off. I hurt both my arms, and was off duty 13 days. The speed was reduced to eight or ten miles an hour when we struck. I did not notice the siding signal.

8. *William Campbell*, through guard between London and Glasgow.—I left London with the 9 p.m. train, Carlisle at 5.29 a.m., 14 minutes late, and Carstairs at 7.25, 20 minutes late, with 9 vehicles, including two break vans. I was in the front van next the engine, and conductor Douglas, who is now sick, in the rear van. I saw after leaving Carstairs that the down home signal was off. I did not notice the down distant signal. I saw nothing of the waggons, and the collision took me quite unawares. Our speed at the time was about 14 miles an hour. I was entering the time in my way bill when the collision happened. I was not injured. No vehicles left the rails, but the projecting side of the van was knocked off. The two carriages next the van were connected with the engine by a chain break, and the rear van and two carriages in front of it were also connected together by a chain break. The break was put on by the driver, but I don't think the conductor put his on. I did not notice the siding signal. The collision occurred at 7.29 or 30.

Conductor *Douglas* states that he did not apply his break, as the collision took him unawares.

Signal-fitter *Gowan* denies having made any statement as to the gong between the dwarf frame and the signal cabin having been disconnected, or not in working order, and affirms that the apparatus was in good working order on the 22nd ultimo, when he last examined it.

Three causes combined to bring about this collision.

1st. There was a defect in the apparatus connected with the dwarf frame, as the bolt worked by the lever in the signal cabin did not lock the levers in the dwarf frame after the departure of the mineral train at 6.55 a.m., thus permitting the breaksman again to use these levers without first getting the signalman's permission. Nor did the lever in the dwarf frame, which should, when moved over, have put the down home signal to danger, appear to have done so, as there is every reason to believe that this signal was off for the driver of the passenger train when he approached and passed it at the very time that the siding points must have been in use.

2nd. The rule as to the use of the gong communication between the dwarf frame and the cabin was, according to the evidence, but imperfectly obeyed. Had it been obeyed on this occasion, notwithstanding that the apparatus was not working properly, the collision would not have occurred. Both breaksman Robb and signalman Morrison are to blame for this, the former for not having used the gong, and the latter for not reporting the fact (which he acknowledged was of frequent occurrence) of the breaksmen not using it properly.

3rd. The driver of the mineral train had no right to leave the sidings with the siding signal almost in the position of danger, as he acknowledges it to have been. If this signal had been, as he states, for some length of time in bad working order, he should have reported it.

The occurrence of this collision again shows that the wire-locking of points is not to be depended on, and that it is desirable to substitute rods for wire in such cases.

It also shows how valueless the best rules are unless by a system of constant and vigilant inspection it is seen that they are acted up to.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Major-General R.E.

Printed copies of the above report were sent to the Company on the 27th March.

CALEDONIAN RAILWAY.

Board of Trade,
(Railway Department,)
13, *Downing Street, London, S.W.,*
20th February 1877.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 15th instant, the result of my inquiry into the circumstances connected with the accident which occurred on the 10th instant at Kingennie station, on the Forfar direct line of the Caledonian Railway.

In this case, as the 10.50 a.m. passenger train from Dundee (East) for Forfar was passing over the facing-points at the Dundee end of the loop at Kingennie station, the engine, the tender, the trailing wheels of the first vehicle and the leading wheels of the next one left the rails.

No passenger or servant of the Company was injured.

The engine had its right leading spring broken, also the centre buffer between it and the tender. One of the carriages had a buffer broken.

Sixty-six chairs, one point tongue, one check rail, one crossing rail, 10 rails, and two connecting rods were broken.

The Forfar direct line is single, and at Kingennie station there is a loop line used only for goods traffic. The facing-points at each end of the loop are provided with bolt-locks attached by wires to the levers working the home-signals, so that, if the apparatus is in proper working order, the lowering of either home-signal locks the facing-points over which the incoming train has to pass; and, unless the points are close, the home-signal should be prevented from being lowered. The locking frame is on the platform, and is 132 yards from the facing-points at the Dundee end of the loop. The home-signals (on the same post) are close to the locking frame.

Kingennie station is approached from Dundee on a left-handed curve of 30 chains radius, and on a rising gradient of 1 in 62, which extends up to the points, after which the line is nearly level through the station.

The following is the evidence relating to the accident:—

1. *David Pennycook*, 7 years driver, 12 months on the Forfar direct line.—I left Dundee (East) at 10.50 a.m., right time, with engine No. 49 and tender, running engine first, and a train of six vehicles. Fireman George Brown was alone on the engine with me. My engine was in good order; it had not been in the Perth shops since I had been in charge of it. The tyres were in pretty good order, all in much the same state; the leading wheels were changed about four months since for ones with newly turned-up tyres. The springs were in good order, no plates broken that I am aware of. We left Barnhill station at right time, and on approaching Kingennie I found the distant-signal all right, and the home-signal at caution (its usual position). I was standing on the left side of the engine, and on nearing the station at a speed of seven or eight miles an hour, I did not notice the points, but presumed that they were right from seeing the signal down. I then felt a jerk while between the loop-points and siding-points, and the engine ran into the ballast, stopping opposite to the siding-points, *i.e.*, about 52 yards from the loop-points. The right wheels were about in the centre of the 4-ft. space of the main line, and the left wheels in the centre of the 6-ft. space. The centre tender-coupling had given way, but the side chains remained on, and the tender was in much the same position as the engine, only nearer to the main line. The leading wheels of the carriage next the tender were on the main-line rails, but the trailing wheels had dropped between the rails from the road having spread, and also the leading wheels of the next carriage; all the other wheels were on the main-line rails. All the couplings remained good. Some of the train remained on the Dundee side of the points. I went back to look at the points at once, and found them lying close, but the left-hand tongue was broken about 2 ¼ft. from the heel. I found also the home-signal lever in the locking frame still over, and the home-signal off. I could not tell how it was we had got off the road. There was nothing else standing at the station at the time. I never felt anything wrong at these points before. The engine had all the plates of its right leading spring broken. No other spring was broken but this one. The spring had been only three days in; it was a new one to replace the former one which had the top plate broken. The engine received no other damage of consequence.

2. *George Brown*, fireman five years.—When we were close to the points at Kingennie station our speed was eight or ten miles an hour. Both distant and home signals were off. As I was standing on the right side of the engine, I did not notice the points before reaching them. At the points the engine, which had before been travelling steadily, first dropped, then rolled, and then ran along the ballast, stopping with the end of the tender opposite the siding-points. I had put the break on and the driver had shut off steam before reaching the loop points. I did not notice the points particularly after the accident, further than seeing that the left blade was broken.

3. *Andrew G. Smith*, guard four years.—The 10.50 a.m. train from Dundee to Forfar on the day of the accident consisted of engine, tender, two third-class carriages, two first-class, one second-class, and a break-van. I was alone in the break-van. We started punctually, and kept time up to Barnhill. We approached Kingennie at the same speed as usual, *i.e.* eight miles an hour when near the points, the signals having been off. Feeling a sudden stop was the first I knew of anything being wrong. The train stopped with about half of it on the Dundee side of the points. Some of the wheels of the first carriage and the leading wheels of the second carriage were off the rails, and the rest of the wheels all on the rails. I examined the points immediately after the accident, and found them lying close. The left blade was broken. The home-signal remained off after the accident. One of the buffers of the carriage next the engine was injured.

4. *David Simpson*, station-master at Kingennie since last September.—I have instructions to see that facing-points are oiled daily and are held (when not locked) when a train (whether passenger train or goods train) is passing over them. I know by telegraph when trains are expected. The points in question had been oiled between 9 and 11 a.m. the previous day; they were points that worked well, but I had reported a few days previously that the bolt-lock had not entered them far enough, and the necessary repair had been made. The last train that had passed through the points at the Dundee end of the station was the 8.5 a.m. goods train from Monikie to Dundee, which had passed at 9.40 a.m. or thereabouts. I had not been up to the points after this before the accident, but I saw porter James Lawrence at them immediately after the goods train had passed through them. He was trying them to see if they worked properly. He said nothing to me about them. I am quite sure nothing used the points after this until the accident occurred. At about 11.12, on receiving the telegraphic signal for the passenger train from

Broughty junction, I saw Lawrence take off the outdoor signals for it. I was booking passengers when the run-off occurred. Lawrence was on the platform. I ran out on hearing the train stop. I then examined the points and found them lying properly, and afterwards I found that the left tongue was broken.

5. *James Lawrence*, porter about a year and about six months at Kingennie.—I am 17 years of age next June. My duty with regard to the points is to see that after a train has passed out of the station the facing-points are right for a train to come in. I am aware that complaint had been made about the working of the bolt-lock of the facing-points in question, but the chain had been tightened up since the complaint. This was about a month before the accident. The points had not been oiled on the 10th, but they had been after the 10.50 a.m. passenger train had passed the day before. The last train that had passed over the points was a goods train at about 9.40 a.m. After this I went to the facing-points, and found them lying right for the main line, but nevertheless I moved them backwards and forwards to prove them, and left them lying close for the main line. I am quite sure that the points were not meddled with after this. I was never out of sight of them. I lowered my signals for the passenger train when the block-signal from Broughty junction was received, first the home-signal and then the distant-signal. They worked as usual. I did not feel the home-signal lever pull heavy. I was standing at the lever handles as the passenger train approached. I put my distant-signal up after the train had passed it, but I did not put the home-signal up at all. I was looking at the train, which appeared to be coming about the same speed as usual, and saw the engine leave the rails.

6. *Peter Roger*, ganger three years on the Forfar direct line about Kingennie, previously 20 years on the Dundee and Arbroath line.—I was about a quarter of a mile off when the accident occurred, and was up at the spot at once. After the train had been removed I examined the points, and found the left-hand blade broken. It was a new break. I observed no blow on the tip of the blade. The points were in good order before the accident, and the gauge correct.

7. *Peter Grant*, inspector of permanent way from Dundee to Arbroath, and on the Forfar direct line.—I reached Kingennie about 2 o'clock on the 10th. I found the left blade of the points broken three feet from the heel, and I saw afterwards a flaw on the tip of the blade. I observed that the locking-bolt entered about 1½ inch through the transverse rod when the home-signal was lowered to caution. I had examined this locking bolt about four days previously with the station-master, and found it would pass through about 1½ inch when the signal was lowered, and this I considered sufficient. I found the first chair broken was the fourth from the tip of the left tongue, and the fifth and seventh chairs were chipped on the outside of the left rail, and there were marks also on the chairs of the right rail. My opinion was that the engine wheels had got astride of the points, which had not fallen properly back after the goods train had gone out. On the next day but one (Monday) I saw a scratch across the transverse bar, where the point of the bolt had probably rubbed. This was a fresh mark. The damage to the permanent way reported in the return is correct.

It thus appears that as the 10.50 a.m. train from East Dundee was passing the facing-points at the Dundee end of Kingennie station, where the signals were duly lowered for it, at a speed of 7 to 10 miles an hour, the engine, tender, and first two vehicles left the rails, the remainder of the train remaining on the rails of the main-line. From the mark on the tip of the left tongue and the fracture of this tongue, and from the marks on the adjoining chairs, there is every reason to believe that the left tongue was not close home (as it ought to have been) to the stock rail, and that the engine wheels were thus enabled to get "astride" of the points and leave the rails. When I examined the locking apparatus this morning, I found that it was perfectly possible to pull off the home-signal with the points not closed, without feeling any unusual drag on the lever, as the bolt-lock did not pass a sufficient distance through the transverse rod. If therefore the porter did, as he affirms, examine the points and leave them right after the goods train had passed through them in a trailing direction at 9.40 a.m., they must, from some unexplained cause, have become partially opened before the arrival of the passenger train an hour and a half afterwards; it would appear therefore to be more prudent that the examination of facing-points should take place immediately before the arrival of a train.

This accident, however, and several others of a similar character, tend to show that wire point-locks are not to be depended upon, unless the apparatus is kept in first-rate order. Locking with rods (by a pulling and not a pushing action) is far more trustworthy, though rather more expensive.

The gauge of the line on the Dundee side of the points was slightly tight when I examined it, suddenly becoming from three-quarters to an inch slack between the points, and then again somewhat tight at and beyond the point heels. These irregularities of gauge should not be allowed to exist, and under no circumstances should the gauge of a curve be tight.

The engine appeared to be in good working order, and there is no reason to impute the accident to any defect in it.

I have, &c.,
C. S. Hutchinson,
Major-General, R.E.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th March.

EAST AND WEST JUNCTION RAILWAY.

Board of Trade,
(*Railway Department,*)
Kineton, 26th February 1877.

Sir,

In compliance with the instructions contained in the Order of the 12th inst., I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 3rd inst., at the Kineton station on the East-and-West-Junction Railway.

In this case, as the 4.45 p.m. passenger-train from Stratford for Blisworth was approaching the Kineton station, the engine passed in the wrong direction through the facing-points leading to the loop-line. The points fell back to their proper position after the passing of the engine, and the three carriages behind it went in the proper direction. One carriage was dragged off the rails between the engine and the two other carriages, but very little damage was done to the rolling stock. There were no passengers in the carriage, and none of the servants of the Company were injured.

The points in question are about 200 yards from the station. They are worked by a lever on the ground opposite to them, and locked from the station by an apparatus known as a "wire-lock," constructed

by Messrs. Stevens & Co. It is not the practice to have a man at these points as the train approaches. The lever for locking these points is interlocked with the lever for working the signals. The line being worked almost as a mineral line, comparatively few passengers are carried.

Evidence.

The engine-driver of this train, *John Brown*, left Stratford-on-Avon at 4.47 p.m., two minutes late, on the day in question, with a tank-engine and three passenger-carriages. Nothing unusual occurred until he was approaching Kineton station. When he was within 30 or 40 yards of the loop-line points on the west of that station, he noticed that they were apparently shut. He reversed his engine, and whistled for the guards' break. His engine went along the down road without leaving the rails, whereas it ought to have gone along the up road. The carriage following the engine went along the up road. When the train came to a stand, the last carriage of the three stood off the points but on the rails of the up road. The carriage in front of it was also on the rails of the up road, and the carriage next behind the engine stood across the two roads and fell over on its side. The points were working properly after the accident. The distant and home signals were both off to allow him to run into the station.

The fireman, *Frank Goodwin*, states that the evidence of his engine-driver is quite correct. The engine-driver first saw that the points were set in the wrong direction, whilst he himself applied the break.

The guard, *John Days*, says his train started from Stratford at 4.48, three minutes late, and they approached the Kineton station about 5.13, also three minutes late, at a speed of six or seven miles an hour. He heard the break-whistle a few yards from the loop-line points on the west of the station. He had already applied his break for stopping. He was riding in the middle carriage of the three carriages behind the engine. He was looking out through the window in front of his break compartment, and he saw the carriage in front of him turn over on its left side. He found afterwards that it had been turned over in consequence of the engine having taken the down road to the right, whilst this carriage took the up road to the left in passing through the loop-line points.

The engineer of the company, *Mr. Bourke*, was on the spot about a couple of hours after the accident. He found the engine still standing on the down line, and the carriage next behind it tipped on to its left side, and the two carriages behind that carriage standing on the rails of the up line. He examined the apparatus by which the points were locked from the station, and he found that it was in working order. He found a mark on the locking-rod showing where the locking-bolt had rubbed against it, and that it had been forced back by the passage of the engine before the carriages took the right road. He inferred from what he saw that the wire must have been stretched and out of adjustment so as to allow the signal to be lowered while the points were set in the wrong direction.

Conclusion.

This accident has clearly been caused by the failure of the wire-locking apparatus at the Kineton station to secure the points in the proper direction as the passenger-train was approaching the station. This is not the first time that apparatus of this description has failed, and is another proof that it is not safe to trust to such apparatus without having also a man at the points to take care that they are properly set for trains approaching them in a facing direction. These points are too far from the frame containing levers for working the points and signals to allow of their being safely worked by rods from that frame; but if a signal-cabin were to be erected more nearly half-way between the ends of the loop-line it might then be possible to work both sets of points from that cabin by means of rods connected with levers interlocked with the signals.

Meanwhile, an order has been given that a man shall be stationed at these points whenever a train is approaching the station from the direction of Stratford.

I have, &c.,
H. W. Tyler.

The Secretary,
(Railway Department),
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th March.

FURNESS RAILWAY.

Board of Trade,
(Railway Department,)
13, Downing Street, 6th February 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 18th ultimo, the result of my inquiry into the collision which occurred on the 12th ultimo at Corkickle Bank junction, near Corkickle station, Whitehaven, on the single line used by the Whitehaven, Cleator, and Egremont Company's trains, but belonging to and maintained by the Furness Railway Company.

In this case the Whitehaven, Cleator, and Egremont Company's 6.4 p.m. passenger train, from Marron station for Whitehaven, ran into a train of empty waggons, brought by a London and North-western Company's engine, and deposited on the single line (nearly three-quarters of a mile long), between Corkicle Bank and Corkickle station reserved for the use of the Cleator Company's trains.

The collision was not a severe one, and only one passenger has complained of slight injury.

No servants of the company were injured, and there was no damage done to rolling stock.

At Corkickle Bank junction the double line of the Cleator Railway merges into a single line, which continues for half a mile up to Corkickle station, where it joins the single line used by the Furness Company's trains, there being thence a single line through a tunnel three-quarters of a mile long into Bransty station, Whitehaven. The single line used by the Furness Company's trains runs for a considerable distance, parallel to and close alongside of the double and single line used by the Cleator Company's trains, and at Corkickle Bank junction there is a connection between the two, and here also several sidings join the Cleator Company's up line. The junction cabin is provided with home and distant signals; but the points and signals are not interlocked, nor are there any adequate arrangements for ensuring the safety of the single line working between the junction and the station; but the signalman has to be guided, to a great extent, by the state of the signals at the station cabin, as to whether he can allow trains to proceed on either single line towards Corkickle station.

The siding accommodation is quite inadequate to the amount of traffic that has to be dealt with, and negotiations for additional land have been for a long time in progress. These have, I understand, lately been nearly brought to a successful issue, and improved arrangements are, I am informed, very shortly to be carried out; certainly not before they are wanted.

The collision occurred about 7.35 p.m. at a point 135 yards inside the down home-signal, and 55 yards on the station side of the signalman's cabin, which is on the ground. The gradient is nearly level.

The evidence is as follows :—

1. *John Walton*, six years signalman in the service of the Furness Railway Company, and five years at Corkickle Bank junction: "I came on duty at 1 p.m. "to remain till from 10 p.m. to 11 p.m., according to "the passing of the last train. A little before 7 p.m. "a London and North-western train of empties "arrived from Bransty on the Furness line to be put "away in the sidings, previously to being taken "forward on the Cleator line. As there was no room "in the sidings I had it backed on to the Cleator "single main line. To do this the empty train had "to be crossed on to the up Cleator line, and the "reason I did not leave it there until the Cleator "down passenger train had passed, was because the "Cleator single line was blocked at the Corkickle "station end, and the Cleator passenger train would "consequently have to run in upon the Furness single "line. The empty train stopped when it was clear of "the crossing from the Cleator to the Furness line. "The London and North-western engine then re-"crossed to the Furness line, and went away towards "Whitehaven. After this engine had gone away the "Cleator passenger train arrived. I could not at "once let it across on to the Furness line, because "another London and North-western train of empties "was on its way from the station. The only way I "have of knowing whether a train is approaching on "either single line is by the state of the signals at "Preston Street junction, 850 yards off. The 2nd "London and North-western train then arrived, and "following the course of the first one, passed on to the "Cleator single line, and pushed back the waggons "of the first one, until the crossing was again clear. "Its engine then went down the Furness line towards "Whitehaven, no light having been left upon the "front waggon. I then dropped the home-signal for "the Cleator line for the passenger train to draw "forward, and went to the side of the engine as it "passed my cabin, and told the driver he had to go "down the Furness line, which required him to back "on to the Cleator up line, and then to cross. He was "going very slowly, and appeared to hear me. I "stood at the points of the cross-over road with a red "light, ready to stop the driver, but instead of "stopping he went on until he came into collision "with the waggons. The tail end of the passenger "train, when it came into collision, was about two "carriage lengths beyond the points of the cross-over "road that I was holding. This mode of working "the passenger trains occurs perhaps about once a "week. The night was neither light or dark. I "heard the guard of the Cleator train near the signal "post say, 'Our main line is blocked, and there is a "'van on the crossing so that we cannot get down!' "It has been customary to lower the home-signal on "similar occasions to the present. I gave the driver "no hand-lamp, as well as the home-signal. The "driver and I had been good friends previously. I "had no talk with him afterwards. I am quite "sure I gave the driver no hand-signal when I gave "him the home-signal. What I ought to have done "is laid down in Rule 154. The Cleator train stopped "about 20 minutes at the home-signal."

There is an understanding between drivers and signalmen that the down home-signal should be moved up and down when a train is wished to pass it, but not to come beyond the crossing. This, however, is said to apply only to trains in motion.

2. *John Murdoch*, driver 25 years, 19 years on the Cleator line: "I started from Marron junction with "the 6.4 p.m. passenger train for Whitehaven. I "arrived at Corkickle Bank junction at 7.15 p.m., "about 10 minutes late, having been stopped by signal "on the road. I stopped about 40 yards outside the "home-signal, and remained there about 22 minutes. "I made no inquiries about what was stopping me, "but I saw that there were some engines shunting "waggons. The guard was out of his van, but I did "not ask him or the fireman to go and ask what was "amiss. It is a customary thing to be stopped there. "The home-signal was at last lowered, and I sup-"posed I was to proceed along the Cleator line into "the station. I heard the signalman say nothing "as I passed him at his cabin door, with a white "light in his hand; but a few yards from the empty "waggons one of our goods guards gave me a shout to "stop. I shut off steam and reversed, and got back "steam on and struck the waggons at six or seven "miles an hour. The fireman had not time to get "his break on. The blow was slight. No harm "was done. My engine had two white lights on the "buffer beam, but I did not see the waggons, which "had no head light on them, till the guard shouted. "I had no notion that I was to cross and go down "the Furness line. The collision occurred at about "7.37. Had the signal been moved up and down I "should have known what had been meant, or had I "been shown a mixed red and green hand-light. I "took the signalman's white light as intended for me. "I did not hear my guard say anything about the "Cleator line being blocked. I have never seen a "head light on waggons left on the main line under "similar circumstances."

3. *James Howard*, 21 years of age, fireman two years with the Cleator Company: "We stopped about "20 or 30 yards from the home-signal. I remember "the guard saying that a van had been knocked on "to the crossing and was in our way. After starting "somebody cried out to hold on. We were past the "cabin at that time. I had time to put my break "partly on before striking the waggons. The blow "knocked me down. I was not hurt. I saw no hand-"signal given, as I was busy with my fire."

4. *David Farquharson*, passenger guard 14 years: "I started with the 6.4 p.m. passenger train from "Marron at 6.9 p.m. It consisted of a break-van and "three carriages, all coupled together with continuous "breaks. We lost time at Frizzington, and were "then stopped at Corkickle Bank home-signal at "about 7.15 p.m., and were kept there 22 minutes. "I did not go up to the cabin to see why we were "detained, as I was afraid of passengers getting out "of the train. I did not remain in my van, but went "alongside the carriage. I made a remark to the "engine-driver that there was a van on the crossing "as I saw its lights, but I did not know that our line "was blocked, nor was I surprised to see the signal "fall for us. I saw nothing of the signalman as we "passed the cabin, nor did I hear the shout, and the "collision took me unawares. The speed was five to "six miles an hour. I was thrown down, but not "hurt. One passenger complained of his neck being "stiff."

5. *Jacob Sampton*, mineral guard, 10 years with the Cleator Company: "I was crossing the line "between the waggons and the cabin, when I saw "the passenger train start from the home-signal; "I did not hear the signalman say anything to the "driver or go up to him as the engine passed him, "though I was close by. Seeing the engine about "15 yards off and knowing the waggons were on the "main line I shouted to the driver to pull up. He "appeared to hear me as he at once reversed. His "speed was four or five miles an hour. The signal-"man had the usual white light in his hand. I asked "no questions of the signalman."

The proximate cause of this collision was an act of great carelessness on the part of the signalman at Corkickle Bank junction, who, though he says he was perfectly aware that a train of waggons was standing on the main line, only 135 yards from the home-signal applying to that line, deliberately lowered that signal for the passenger train which was standing near it, trusting, as he says, to stop the driver by word of mouth as he passed the cabin, though he had then only 55 yards in which to stop. The signalman must either have forgotten the fact that the waggons were standing

on the main line, or have assumed that the driver knew exactly the state of things, and that the home-signal was lowered for him merely to indicate to him that he was to draw ahead prior to crossing from one line to the other. The mode of dealing with cases like the present is clearly provided for by Rule 154 of the Furness Company's new book of regulations, and had the rule been obeyed the collision would not have occurred.

It is a very wrong thing to leave an obstruction on a running line without lights to indicate its position. Had these been fixed on the front waggon of the empty train it is very probable the collision would have been prevented.

The cause which was at the root of the collision was, however, the want of adequate siding accommodation which obliged the occupation of the single line used by the Cleator Company's trains, by the two empty trains. It is satisfactory to learn that this want will now soon be removed.

It is not, however, creditable to the Furness Company to have so long left an important station, such as Corkickle and its immediate adjuncts, with such imperfect arrangements as at present exist. The junctions might long since have been remodelled, and provision made for siding extensions to be made when ground could be obtained.

In carrying out the contemplated alterations, I would strongly urge the consideration of the importance of doing away with as much of the single line working as possible. If a double line common to both companies, instead of the existing two single lines, were worked from Corkickle Bank junction to the mouth of Whitehaven tunnel, the present risky mode of working would be done away with. Many facing-points might be got rid of, and the traffic in many respects facilitated.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Major-Gen. R.E.

Printed copies of the above report were sent to the Furness, and the Whitehaven, Cleator, and Egremont Railway Companies on the 26th February.

GREAT EASTERN RAILWAY.

Board of Trade,
(Railway Department,)
13, Downing Street, 20th February 1877.

Sir,

In compliance with the instructions contained in the Order of the 16th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the fatal accident which occurred on the 7th instant to Mr. John Wright, a passenger by the 5.12 p.m. passenger-train from Loughton, at the Fenchurch-Street station on the Great Eastern Railway.

In this case, the train having been too long for the last carriage to be brought up to its arrival-platform, No. 3, Mr. Wright alighted from the break-carriage in the rear of it on the ground, beyond the end of that platform. In doing so, he staggered over the line of rails, No. 2, at the moment when a train for Blackwall was starting from the station; he was run over and killed by the engine of that train.

At the Fenchurch-Street station there are five lines of rails, and five platforms, which have been in their present state for upwards of 20 years. The platforms on the south side of the station were originally constructed with a view to passengers leaving the trains on one side on their arrival, and entering them on the other side for departure. The trains which were run in those days were not so long, nor was the traffic so heavy as at present.

The platform to be particularly referred to on this occasion is 112 yards long. It is of considerable width in the middle, but is narrowed towards the east end to a minimum width of four feet five inches; and at the spot where Mr. Wright was killed, beyond the end of it, there is only six feet ten inches between the lines of rails Nos. 2 and 3.

Evidence.

The engine-driver of the Blackwall train, *Joseph Thornton*, states that he received the signal to start his train at one minute after 6 p.m. on the evening of the accident. He saw the signal lowered for him to start from the station, and opened his regulator. The train from Loughton had arrived, and was standing on the other side of No. 3 platform. He was on the right side of his engine, and the fireman was on the left side. The fireman called to him, as he passed the end of the platform, that someone had fallen in front of the engine. He shut off steam, and did his best to pull up, and brought his train to a stand within 20 yards of the point where the gentleman had fallen. He then found that his engine-wheels had run over the gentleman and killed him.

The fireman, *William Bishop*, noticed, as the train was starting, that Mr. Wright, on alighting from the carriage, stumbled and fell on the ground at the end of the platform, and in front of the tender of his engine. The engine was running tender first. He called to the engine-driver, and applied his break, and stopped the train as quickly as he could.

The guard, *Allen Grimwood*, states that, just as his train had come to a stand at the Fenchurch Street station, he saw a passenger standing on the foot-board of the carriage-break, which was the last carriage in the train, and stood beyond the end of the platform. He called out to the passenger to stop where he was, but the passenger took no notice, and immediately jumped down, and wheeled round towards the next line, on which the Blackwall train was coming out. The engine of that train knocked him down and passed over him.

Conclusion.

This passenger has thus unfortunately been killed in consequence of his having, on alighting from the break-carriage at the rear of the Loughton train, fallen across the adjoining line, on which a train for Blackwall was leaving the Fenchurch Street station.

There can be no doubt of the great danger to passengers so alighting on the ground beyond the end of No. 3 platform at this station, at a point where there is only a space of 6 feet 10 inches between the two lines of rails, and where there is at any moment a probability of a train passing out of the station along the adjoining line.

I am informed that since this accident one carriage less has been run with the Loughton train, so that in future all passengers arriving by the Loughton trains may be able to alight upon the platform instead of on the ground at the end of the platform. The end of the platform is, however, as above described, very narrow, and I am glad to find that the company are further contemplating alterations, which are much required, of the lines and platforms at this station, to enable the traffic to be worked with greater safety in these respects.

I have, &c.,

The Secretary,
Railway Department,
Board of Trade.

H. W. Tyler.

Printed copies of the above report were sent to the Company on the 9th March.

GREAT NORTHERN RAILWAY.

Sir, *Bradford, 23rd February* 1877.

In compliance with the instructions contained in the Order of 18th January, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 12th ultimo, at the Shipley junction, near Laister-Dyke, on the Great-Northern Railway.

In this case, the 4.35 p.m. passenger-train from Bradford for Wakefield was wrongly turned through a pair of facing-points at the above junction, and came into collision with the engine of a special coal-train, which had been shunted back from the Gildersome to the Shipley branch. Neither the engine nor any vehicle in either train was thrown off the rails. The damage to the rolling-stock was not material. Nine passengers have, however, made complaints of injury. The two guards of the passenger-train were somewhat hurt.

On the east of the Laister-Dyke station there are two junctions: first, a junction between the Leeds and the Gildersome lines; and, secondly, a junction between the Gildersome and the Shipley lines. Connected with and on the north of the second junction and the Shipley line is a goods-yard. A train passing from Laister-Dyke has, therefore, to run, about 30 yards after leaving the station, through the facing-points of the first junction; and then, about 30 yards beyond, to run through the facing-points of the second junction. Near the first set of facing-points is a bracket-post carrying the semaphore-arms applying to both junctions, and an engine-driver, on finding the proper arm lowered near the first junction-points, is justified in running forward, in the direction to which this arm applies, through the second junction. The whole of the points and signals at and near these junctions are worked from a signal-cabin on a bridge over the Leeds and Laister-Dyke main line between the two junctions.

Evidence.

The engine-driver of the passenger train in question, *Daniel Ledder*, states that he left Bradford at 4.35 p.m. punctually. His train consisted of an engine and tender, and four carriages, of which two were break-carriages. In starting from the Laister-Dyke station he whistled, and the proper semaphore arm was lowered for him to run through the two junctions towards Gildersome. He was proceeding forward in due course, when he suddenly found himself turned round towards the Shipley line instead of running along the Gildersome line. He heard three or four people shouting, and immediately afterwards his train struck the engine of a coal-train on the Shipley line, at a speed of about ten miles an hour. He had only time to shut off steam and reverse his engine before the collision.

The fireman, *Michael Scholefield*, states that the evidence of his engine-driver is quite correct. He was putting coals on the fire when his driver called out "Look up, mate;" he had only time to seize the break-handle before the collision, and at the same moment he saw the signalman rushing to the door of the cabin with a red light in his hand.

Walter Pinion, the head guard, was riding in the front break-carriage. After leaving Laister-Dyke he was standing at his break-handle, when he felt the shock of the collision without having received any warning of anything being wrong. He was off duty for three weeks from his injuries.

George Cobb the under-guard, was sorting some letters and parcels in the last vehicle when he felt the shock of the collision. This guard was also off duty for three weeks, having been hurt in the side.

The engine-driver of the coal-train with which the above passenger-train came into collision, left Ardsley about 3.20 p.m., and reached Laister-Dyke at 4.20 p.m. He whistled for the signalman to set him back into the sidings; and was told by the signalman, as he was turned back into the Shipley branch, not to go too far back, because there was an engine taking water; he therefore brought his engine to a stand about 50 yards from the Shipley-branch junction-points. He had been in that position for six or seven minutes, when he saw a passenger-train approaching. When he saw it taking the wrong direction, he applied his steam, and his train was just getting into motion when the collision occurred.

The fireman, *Edmund Fenwick*, has nothing to add to the above statement of the engine-driver.

The guard, *Richard Cressy*, was standing against the engine of his train when he saw the passenger-train turned in the wrong direction; he ran forward and shouted to the signalman.

The signalman on duty at Laister-Dyke east-junction, *Edward Clarke*, came on duty at 2 p.m., and works eight hours a day. He saw the coal-train reach Laister-Dyke; and his goods-sidings being blocked up with traffic, he was obliged to shunt back the coal-train on to the Shipley main-line temporarily, until it could be got through to the east end of the goods-yard to leave its wagons. There was an engine taking water on the Shipley line, which prevented the coal-train from at once going through to the east end of the yard. He lowered the proper semaphore-arm for the passenger-train in question to start from the Laister-Dyke station; both sets of junction-points were thus locked in the proper direction. When that train had cleared his signal he returned it to danger. An acting-inspector was then in the cabin, having lost an engine, which he was inquiring about; and he had just received a telegram about some wagons required for another station. Whilst speaking to this acting-inspector, he had his hand on the lever of the Shipley and Gildersome junction-points; and whilst the passenger train was passing between the semaphore-arm and those junction-points, he pushed over the lever of the points of the second junction, intending to push over the lever of the points of the first junction. He saw in a moment the mistake he had committed in pushing over the wrong lever, but there was no time to correct it, and the collision immediately occurred. He has been doing duty for nearly eight years at this junction, and in the present cabin ever since its opening, nearly two years ago.

Conclusion.

This collision was caused by a mistake of the signalman on duty at the Laister-Dyke east-junction, who pushed over a wrong lever just as the passenger-train was approaching the second junction-points.

The signalman is an excellent and respectable man, in the receipt of high wages, viz., 28*s.* a week, besides a bonus of 5*l.* a year, the half of which he will now lose for the first time in consequence of the mistake he has committed.

With a view to the prevention of such a mistake in future, the officers of the Company propose to erect an additional signal-post near the points of the second junction above referred to; this post to carry three arms, applying, respectively, to the Gildersome branch, the Shipley branch, and the goods-yard points connected with the latter branch. These arms being interlocked with the facing-points in these three directions, respectively, it will not be possible for the signalman to make such a mistake as that which led to the present collision.

I have, &c.,
H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 9th March.

GREAT NORTHERN RAILWAY.

Sir, *Finsbury Park, 26th January* 1877.

In compliance with the instructions contained in the Order of the 22nd instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the evening of the 20th instant, near the Finsbury-Park station on the Great-Northern Railway.

In this case, the 7.40 p.m. passenger-train from Cambridge for the King's-Cross station, London, (numbered 227 in the Company's working time-book) came into collision, about 350 yards on the north of No. 6 cabin, near the above station, with No. 97 up-goods-train, 11.5 a.m. from Peterboro' for London, which was preceding it on the same line of rails.

Neither the engine, the tender, nor any vehicle of the passenger-train was thrown off the rails. The buffers, life-guards, and head-lamps were broken or knocked off the passenger-engine, as well as the sand-box, and the damage to this engine is estimated at 25*l.* The body of one of the passenger-carriages was slightly displaced, the glass was broken in part of the guards-van, and some buffer-blocks and axle-boxes were broken, but the whole damage to the passenger-train is said not to exceed five pounds. The break-van and two waggons of the goods train were broken up and destroyed, and four others were thrown off the road, and were more or less damaged.

Up to the present time five passengers have complained of injury. The front guard of the passenger-train was also injured.

Description.

There are on the approach from the north to the Finsbury-Park station three lines of rails on the up side, viz., the "main or fast line," the "slow line," parallel to it, and the "High-Barnet branch line," descending from a bridge over the railway. The present collision occurred on the fast-line, to which only it is necessary here particularly to refer. The signal-cabin No. 6 is about 80 yards on the north of the station-platform. The up home-signal worked from that cabin is 119 yards to the north of the cabin, and the distant-signal is 1,092 yards north of the cabin. The cabin is a raised one, of modern construction, containing numerous levers for working the signals and points on the up side only, and numerous instruments for block or speaking purposes. The block section on which the collision occurred is between the above cabin (No. 6) and the Hornsey signal-cabin, about a mile and a half north of it. Amongst the telegraph-instruments in the cabin used on this occasion were the block-instruments of the "Spagnoletti" pattern, and a double-needle instrument communicating between these two cabins, and also with other cabins. On the south of the home-signal referred to are a pair of points leading from the fast-line to the slow-line running through the station and east of the fast-line. It was through these points that the goods-train in question was intended to pass to the goods-yard on the south of the station.

The passenger-train in question consisted of an engine and tender (No. 564), five carriages, of which two were break-carriages, a milk-van, and a covered-carriage-truck.

Evidence.

The engine-driver, *William Buck*, after leaving Hitchin in due course, stopped at Hatfield in the usual way, and left that station about three minutes late; and he was running to time, having found all the signals lowered for him, until he approached a guard on the main-line with a red hand-lamp. He could see this red hand-lamp about 200 yards before he reached it. He reversed his engine, and whistled at once for the breaks, and his fireman at the same time applied the tender-break. He reduced his speed from about 40 miles, when he first saw the guard, to about 25 miles per hour before he passed the guard, and 50 yards after passing him he came into collision with the break-van of a goods-train, which was standing on the main-line in front of him. He estimates his speed at about 20 miles per hour at the time of the collision. He remained on his engine, and was hurt in the hip and back, but was only off duty for one day in consequence. He had shut steam off sooner on this occasion than he would otherwise have done, because a down-train was passing, and the steam of its engine prevented him from seeing whether the distant-signal worked from No. 6 cabin was at "danger" or not. He did not see the lights at the tail of the goods-train until he had seen the red hand-lamp of the guard of the goods-train. The tail-lamp and side-lamps were all three burning well when he did see them. The fog and the steam from a down main-line train which had passed combined to prevent his sooner seeing the lights at the tail of the goods-train.

The fireman, *Henry Harrison*, believes the statement of his engine-driver to be perfectly correct. He applied his break in approaching the distant-signal worked from No. 6 cabin, Finsbury-Park, and had partly taken it off again on seeing the distant-signal at "all-right." When he saw the guard on the main-line he again applied the break, and got it on as tightly as he could until the time of the collision.

The head-guard, *George Beckworth*, was riding in a break-carriage next behind the tender. He was looking out after passing Hatfield, and noticed that all the signals were at "all-right," including the distant-signal worked from No. 6 cabin, Finsbury-Park. He neither saw nor heard anything more until he felt the shock of the collision. He was stunned at the time, and did not know what had happened, but found afterwards that his chin was cut, probably by the glass of the van. He does not remember having heard any whistle for the breaks previous to the collision. He may have heard whistling, but if so, has forgotten it by reason of having been stunned at the time of the collision.

The under-guard, *F. Beacham*, was riding in a break-van at the rear of the passenger-carriages, with a milk-van and carriage-truck behind him. He saw everything all-right, including the distant-signal from Finsbury-Park No. 6 cabin, after leaving Hatfield, and was not aware of anything being wrong until he felt the shock of the collision. He heard no break-whistles, and he felt no unusual slackening of speed. He applied his break at the distant-signal, and it was tight on when the collision occurred, in preparing to stop at the station.

The goods-train in question left Peterboro' at 11·5 a.m., right time, and Potter's-Bar at 8.23, 2 hours and 18 minutes late. It consisted, when the collision occurred, of an engine and tender, 34 waggons loaded with goods or coal, one empty waggon, and two break-vans.

The engine-driver, *George Platt*, after leaving Peterboro', lost time at the various stations on the line, (at nearly all of which he was booked to stop,) either in shunting out of the way of other trains, or in other ways. After leaving Potter's-Bar, the Ganwick signals were against him, and he came cautiously down the bank. He saw the signals "all-right" at Hadley and Barnet, but against him at Oakleigh Park; and he was checked by signals all

the way to the Finsbury-Park distant-signal, which was off as he approached it; but as he passed it, that signal was thrown up in his face. He said to his mate: "That wont do for me, so we will go on and see the next signal." He, therefore, approached the home-signal cautiously, and, finding it at "danger," pulled up about 30 yards on the north of it. He remained there, keeping his eye on the signal, and waiting for it to drop, to enable him to run through the station to the goods-yard at the south of it. Whilst standing there, he saw a train pass on the up-slow-line, and then two trains came off the up High-Barnet-line, and he thought it would be his turn next to be allowed to run through the station. He had been standing there about 10 minutes, as nearly as he can say, when the collision occurred; but he was not aware of the approach of the passenger-train until he felt the shock, which knocked his engine forward about a tender length. When he found the distant-signal turned to danger in his face, he gave three whistles, as a signal to be crossed to the east goods-yard in passing through the Finsbury-Park station, as the usual signal for such a purpose. He did not afterwards open his whistle until the collision, because he saw that there were other trains which prevented the signalman from admitting him into the station. He could see the signal-cabin plainly, and the man walking about in it, from his engine, as he stood about 30 yards north of the home-signal. He does not think there was anything to prevent the signalman from seeing the lamps on his engine, if he had looked for them. He had a green head-light on his engine, and a white light on the side of his tender. There was a fog hanging near the ground, but he could see the stars plainly, and the atmosphere was clear overhead.

The fireman, *Leonard Joy*, states that the evidence given by his engine-driver is quite correct. He was also looking at the home-signal, and waiting for it to be lowered, when he felt that the waggons bumped up against his tender, as the result of the collision. He could see the light of the signal-box very plainly.

The head-guard, *John Lentell*, was in a break-van next behind the tender. His train was delayed after leaving Potter's Bar, in consequence of a coal-train being in front. He booked 9.3 as the time at which his train came to a stand short of the Finsbury-Park home-signal. He was leaning over the side of his van, looking for the signal, when he suddenly felt the shock of the collision. The collision occurred at 9.10. He is certain that he had been standing seven minutes before the collision.

The under-guard, *Henry Barrell*, was riding in a break-van at the tail of the goods-train. He at once left his van, and as soon as he reached the ballast he saw a train entering the station on the slow-line. He expected, in the first instance, that his train would be admitted to the station after this slow-train. Finding that was not so, and thinking that his train was being kept outside longer than usual, he proceeded back with his hand-lamp for a distance of about 50 yards, and then saw the passenger-train from Cambridge approaching, and passing the distant-signal. He ran forward and showed a red light on the main-line to the engine-driver. He estimates that the passenger-train passed him at a speed of 20 or 30 miles an hour before it came into collision with his train. He was unable to see a signal in either direction from where he stood, partly from the foggy state of the atmosphere, and partly because a train which had recently passed had left some steam which mingled with the fog. There were a tail-light and two side-lights burning brightly at the rear of the goods-train.

The signalman on duty at the Hornsey station, *John Camfield*, produces his record-book, by which it appears that goods-train No. 97 was signalled to him "be-ready" at 8.48; "train-on-line" 8.50; left him at 8.54; was "cleared" at 8.54; "train-on-line" given to Finsbury-Park at 8.54; received "line-clear" from Finsbury-Park for it at 9.2; and "F." is marked against it, to show it went along the fast-line. The passenger-train which came into collision with it is marked in his book as follows: He received "be-ready" for it from Wood-Green at 9.5; "train-on-line" at 9.6; it passed at 9.7; he "cleared" it to Wood-Green at 9.7; and sent "train-on-line" for it to Finsbury-Park at 9.7; and it was "cleared" from Finsbury-Park at 12.30, which was the middle of the next day, as soon as the line was cleared. The following remarks appear with reference to the same train: "S. B. B. S. 9.13, c. 9.47," and he interprets the meaning to be "Finsbury blocked slow-line 9.13, " and cleared it at 9.47." The slow-line was not, however, blocked by the collision. Nothing whatever unusual occurred either on the "block" or the "speaking" instruments between Finsbury-Park and his cabin in regard to either of these trains or any previous train, excepting that at about 8.57 Finsbury-Park asked, "What was on fast-line?" He replied to Finsbury-Park, "9.7 goods." When the above question was asked, the block-instrument showed "train-on-line." It was on the reply that was sent him that Finsbury Park gave "line-clear." It was five minutes after the question was asked that Finsbury Park gave "line-clear" to his cabin. It is a usual thing at times to ask such questions. It may happen once a week that such a question is asked; but it may not generally be so often as that. The up-train which passed before the goods-train, also on the fast-line, was No. 134 coal-train, which is booked as follows: "be ready," from Wood-Green, 8.38; "train-on-line" from Wood-Green, 8.41; passed Hornsey 8.44; "clear" given to Wood-Green 8.44; "train-on-line" sent to Finsbury-Park 8.44; "line-clear" received from Finsbury-Park 8.52.

The signalman on duty at Finsbury-Park cabin No. 6, *Henry Sadler*, came on duty at 2 p.m., having been relieved at 10 p.m. on the previous evening. He takes eight hours duty at this cabin. He is a relief-signalman for the London district, and had previously been one day in the cabin learning the duties, and in charge of the cabin for five days, in turns of eight hours each. He has also done duty at Finsbury-Park as signalman before, about two years ago, before the present arrangements came into force. He had charge of the old cabin at the station about 12 months before he was made a relief-signalman. He produces his record-book, by which it appears that a train described in the book as "97 goods" was telegraphed to him at 8.43, "be-ready" from Hornsey; "train-on-line" from Hornsey, 8.45; passed at 8.53; "line-clear" given at 8.53; "line-clear" received from No. 4 box, Finsbury-Park station, at 8.56. Then there are figures which are scratched out, as follows: 8.52, "be-ready" from Hornsey; 8.54, "train-on-line" from Hornsey, 227 passenger; "8" and "8" written under the columns for "Departed or passed," and "line clear given to station in rear," in preparation for further entries. Some further entries occur further down with regard to 227 passenger-train: 9.7, "be-ready" from Hornsey; 9.9, "train on line" from Hornsey; 9.11, passed No. 6 cabin; 9.11, "cleared" to Hornsey; and "9.—," in readiness for a further entry when "line-clear" should be received from the south. With reference to these entries, he explains that those first marked as referring to No. 97 goods train, were in reality the entries for 134 coal-train which preceded it; that the second series of entries, which he has cancelled, belonged properly to No. 97 goods-train, in regard to which he afterwards got into confusion; and that the third series of entries applied properly to No. 227 passenger-train, but the two last of them were improperly entered, as that train was approaching him, in preparation, as he thought, for its passing him in due course.

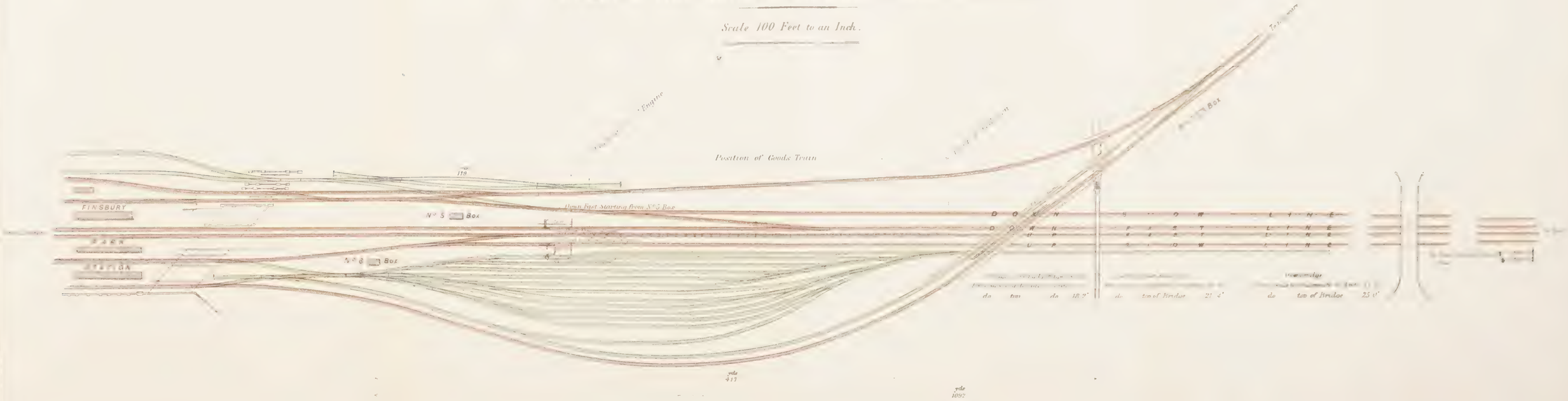
In accounting for the state of confusion into which he had thus got between the goods-train and the coal-train, he states that at 8.25 he received on his speaking-instrument notice from No. 7 cabin, Finsbury-Park, as follows: "R.E. gone home and left

To accompany Captain Tyler's Report of the 26th January 1877

GREAT NORTHERN RAILWAY.

PLAN OF LINE NORTH OF FINSBURY PARK STATION.

Scale 100 Feet to an Inch.



" signals at danger, stopping all down trains; let " Mr. Webb know." He rang his gong communicating with the Finsbury-Park station to call a porter. The porter came, and he told him the message he had received. The porter fetched the station-master, Mr. Webb, who came up to No. 6 cabin, and told him to telegraph to Crouch-End to send a man to call trains on by hand, when that could properly be done, until he could arrive at the Reservoir box to get the signals liberated. It was whilst he was engaged with the other instruments, *i.e.* the speaking-instruments between his cabin and Finsbury-Park No. 7 cabin, and between his cabin and Crouch-End station, that he made a mistake in receiving from Colney-Hatch the numbers of the trains for which he was booking the signals from Hornsey, and entered "97 goods" against the figures opposite to which he ought to have entered "134 coal-train." Having first made the mistake of writing "97 goods" in his record-book, in continuation of the times applicable to the coal-train, and having then written other figures which applied to "97 goods-train" in another place, remembering that a train had just passed him, and having got 8.56 as "line-clear" from the south for the coal-train, which he had also applied to No. 97 goods, he began to think that he had made a mistake, and he telegraphed to Hornsey cabin the words "What have I on fast line?" and he received the reply immediately, "97 goods." He then at once pulled off his home and distant-signals, and went to the window to try if he could see or hear anything. He put his signals again to danger about 9 o'clock, and gave the signal "line-clear" to Hornsey as nearly as possible at 9 o'clock; but he could not show this in his book, as he had erroneous signals entered for the train then standing (unknown to him) at his home-signal. It was probably three or four minutes after the time when he received the reply "97 goods" that he gave "line clear" to Hornsey, on the block instrument. The evidence given by the Hornsey signalman was perfectly correct, and there was no one to blame but himself for the mistake which he had made. He was under the impression that the coal-train which had gone by, was No. 97 goods which had passed, and it was under that impression he gave "line clear" to Hornsey for 97 goods-train whilst that goods-train was standing immediately north of him. It was rather foggy, and it was difficult to see the light from the green lamps, unless when in a direct line with them, and he thus accounts for not having seen the lights of the goods-engine. He could see the white light of the passenger-train as it approached the rear of the goods-train immediately before the collision, but he was not aware that the goods-train was standing in the way, between him and the passenger train, until after the collision. He was also suffering from domestic trouble at the time, which prevented his having his wits about him. His wife's death was hourly expected from heart disease, and he does not think he has had an hour's sleep for the last three weeks.

Conclusion.

This collision has, therefore, been caused by the mistakes of the signalman on duty at No. 6 cabin, Finsbury-Park station. The signalman himself admits fully in the above evidence the mistakes which he made, and they are also evident from the entries in his record-book, which correspond perfectly with his admissions. This signalman has received six bonuses for good conduct and careful working, has been promoted from the position of signalman to that of relief-signalman of the London district, and has never had a fine nor a mark of any kind made on his register. He was labouring under domestic affliction, in consequence of the illness of his wife, whose death is hourly expected from heart disease, and his sleep has been for several weeks much disturbed. It was, no doubt, partly owing to this want of rest, and partly to his attention being taken up with telegraphing, under the orders of the station-master, on account of a signal having accidentally gone to "danger," that he made the mistakes which led to the accident. It appears that the telegram which he received, in regard to the signal worked from the Reservoir-cabin, was sent in consequence of the semaphore-arm of the distant-signal from that cabin having risen to the horizontal position, on the fracture of the vertical rod connecting the crank at the bottom with the arm at the top of the post, and this was shortly afterwards found out, and remedied. This signalman omitted to enter the number and description of the coal-train in his record-book when it was telegraphed to him from Colney Hatch,—then entered the number and description of the goods-train opposite to the signals applying to the coal-train,—and next, finding himself with a superfluous set of signals for which he could not account, cancelled them, and gave "line-clear" for the passenger-train; and these mistakes led to all that followed, and were, in fact, the cause of the collision. The object of telegraphing the trains ahead from Hitchin, Hatfield, and Colney Hatch, is to enable the Finsbury-Park signalman to know what to do with the trains when they reach him, and also that he may know how to act, as regards their priority, in admitting them to the station on their arrival.

When such mistakes are made it is important to scrutinise rigidly the circumstances under which they occur, and to consider carefully any means by which they may, if possible, be prevented, and such serious results avoided. There was in the present instance an element of misunderstanding from the practice of telegraphing different items of information from different places, namely, the number and description of the trains from Colney Hatch, and the block-signals from Hornsey; and it thus became possible to enter in the record-book, as was done, the number and description of the goods-train on the same line in that book as the times of the block-signals applying to the coal-train which had preceded it. The goods-train was, again, detained at the home-signal at a considerable distance from the cabin whilst the passenger-train approached from Hornsey, the engine of the goods-train having been at, say 150, and the rear of that train at 350 yards from the signal-cabin. Strange to say, the signalman saw the lights of the passenger-train approaching before the collision, but saw nothing of the goods-train standing between his cabin and the passenger-train. The main-line, which is commonly called the "fast-line," was, further, employed for the coal and goods trains; and it appears to be commonly used on this part of the system for such trains, whilst the slow line is also used for passenger-trains. The signalman was obviously not in a fit state for duties of this description, in consequence of the severe illness of his wife, and the loss of rest under which on that account he was labouring; but he would not, probably, have made the mistake if he had not been disturbed in the course of his regular working by being required to send and receive messages in regard to the signal worked from another cabin, which, being out of order, had caused the traffic elsewhere to be delayed and disarranged.

The Great-Northern Company have gone to great expense in improving the Finsbury-Park station, in separating the signal-working of the up-side from that of the down-side, and in providing extra accommodation in lines and sidings for the traffic. They will now, no doubt, in considering the elements of risk and misunderstanding brought to light by this serious accident, be able to effect some further improvements either in construction or working, or both, so as to prevent, if possible, a recurrence of it. It would seem, at first sight, desirable to provide in the regulations and practice of working,—for instance (1) that a signalman shall be responsible for reporting to his superiors when, in consequence of domestic affliction, illness, or want of natural rest, he is not fit to perform his responsible duties; (2) that he shall not

be disturbed or impeded in the midst of those duties to send telegraph-messages; (3) that if he does at any time happen to get into confusion as regards his block-signals or his train entries, he shall, at such a station, or where it is possible, call the station-master to his aid, and consult with him as to his future course; (4) that the above risk of misunderstanding and false entries, as between train-signals from one place and time-signals from another should be avoided; (5) that the goods and coal-trains should be kept as far as possible on the slow-line; (6) that they should, if detained, be nearer to and more within sight of the signalman; and (7) that an engine-driver thus standing at a home-signal shall take care to make the signalman acquainted with his presence there.

In suggesting these important improvements, I am quite aware of the difficulties that may arise in carrying out some of them in practical working, and I propose, when time has been allowed for their consideration, to take another opportunity of further conferring with the officers of the Great Northern Railway Company in regard to them.

I have, &c.,
H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th February.

GREAT NORTHERN RAILWAY.

Board of Trade,
(Railway Department),
13, *Downing Street, London, S.W.,*
5th April 1877.

Sir,

In compliance with the instructions contained in the Order of the 19th February, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 6th February, near the Kirton station, on the Lincolnshire section of the Great Northern Railway.

In this case, an empty ballast-train was running at a speed of about 20 miles an hour, on its way from Boston to Saint-James-Deeping, for ballast, when the connecting-rod on the left-hand side of the engine failed, and a portion of it penetrated the fire-box. The engine-driver was enveloped in the steam which escaped from the aperture, and, in endeavouring to escape from it, fell from the engine on to the ballast. The fireman hung to the side of the tender until the engine stopped. The engine-driver and fireman were much injured, and the engine-driver has not yet returned to duty. The other men who were with the train were not injured.

Evidence.

Mr. Rouse, the locomotive-superintendent of the Great-Northern Company at Peterboro', states, that he examined the engine, No. 341, on the day of the accident. It is a 6-wheel-coupled engine, with 16-inch cylinders, and 24-inch stroke. He found that the left-hand connecting-rod was broken in two places. The first fracture was at the little end, where there had been an imperfect weld. The second fracture was in consequence of the rod striking the ground after it had been loosened by the first fracture from the other end. A portion, about 18 inches long, was left attached to the crank, and this portion in its revolution struck the fire-box shell, penetrated it, and made a vertical rent, 19 inches long, by $3\frac{1}{2}$ inches wide, through which, of course, the steam would escape with much violence. He found also two holes in the inner copper shell, evidently produced by two separate revolutions of the broken end of the connecting-rod. The injuries from which the driver and fireman suffered would no doubt have resulted from the rents so caused in the inner shell, which would admit of the steam escaping through the fire-box door. The connecting-rod was about 6 feet long, and was broken in the first instance at about 18 inches from the little end. At the point of fracture there had evidently been an imperfect weld, which appeared to have been forged with a "V" piece inserted into it. It is now the practice to forge the connecting-rods in one piece, and thus to avoid any risk which might be incurred in connection with a defective weld. The dimensions of the connecting-rod are much the same as those still employed. These dimensions vary from $4\frac{1}{2}$ inches by 2 inches at its largest part, to $2\frac{3}{4}$ inches by $1\frac{5}{4}$ inches at its smallest part; and the latter were the dimensions of the part at which it failed.

The engine-driver, *Thomas Farrom*, left Boston about 5.30 a.m. with his engine and tender, 24 wagons and a break-van. Nothing unusual occurred until, whilst running at a speed of about 20 miles within 200 yards of the Kirkton station, he heard something break under his engine, and shut off steam. He was immediately almost smothered in steam; and in trying to escape, he fell off the engine on to the ballast. He was stunned and injured on the head, and was very much scalded, but he is now recovering. The accident occurred about 6.18 a.m. He was not able to make any examination of the engine after the accident.

The fireman, *Thomas Marshall*, confirms the evidence of his engine-driver. He scarcely knows himself what occurred, but he felt as though something took him off his feet, and he found himself hanging by the side of the tender. He was scalded about the face and hands, and arms, but began duty again last Monday.

The guard of the train, *Thomas Henseman*, was riding in the break-van next behind the engine, when he saw the steam escaping from the engine, and applied his break. When he reached Kirton he told the signalman to telegraph to Boston, to report that the ballast-engine had broken down, and was unable to take the train any further.

Frederick Senyer, greaser with this train, was riding with the guard in the front break-van. He cannot add anything to the guard's evidence. He ran to the fireman after the accident, picked him up, tied up his hands, and took his coat off. He found that the fire had been blown out of the engine, and noticed the holes that had been made in the fire-box, and saw that the connecting-rod was broken.

Conclusion.

This accident was, then, occasioned by the fracture of the connecting-rod of the engine, in consequence of a defective weld near the smaller end of it. The proper remedy to prevent such accidents from occurring at welded joints in future is being applied by the Company. They are no longer constructing rods welded in this way, but are using rods forged all in one piece, and, in fact, the rod in question may be considered to be one of a type now almost obsolete.

I have, &c.,
H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 18th April.

GREAT NORTHERN RAILWAY.

SIR, *High Barnet, 5th April* 1877.

IN compliance with the instructions contained in the Order of the 25th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on the 7th February, near the High-Barnet station on the Great-Northern Railway.

A second-class carriage was allowed, about 6.40 p.m. on that evening, to escape from the High-Barnet station, and to run back towards London, on the down line, and it met, in doing so, the North London Company's 5.52 p.m. train from Broad-Street for High-Barnet, which was travelling in due course in the opposite direction on the same line. The collision occurred near the down distant-signal of the High-Barnet station. The runaway carriage was not seen by the driver of the passenger-train until he was within a few feet of it. The engine struck the carriage with considerable force, and the end of the carriage mounted on the front part of the engine. But little damage was done to the engine, though the carriage was partly destroyed. No passenger has complained of injury, but the engine-driver and fireman of the North London train were injured.

Description.

The High-Barnet station is about nine miles from London, and is a terminal station. There are up and down platforms, with two lines of rails between them. At the south end of the platform there are, on the down side, points leading to three sidings on the west of the main line. The carriage which ran away along the down line was intended to be shunted back through these points, into the siding nearest the main line. The siding-points are worked from the cabin near them, and the lever for working them is interlocked with the levers for working the signals.

There is a gradient of 1 in 300, falling from the north of the station, for 355 yards; there is next a level portion for 210 yards; and there is then a falling gradient, also towards London, of 1 in 61 for about 814 yards. It was on this latter gradient, at a point about 900 yards from the station, that the collision took place.

The North-London train in question, consisted of a tank-engine, eight passenger-carriages, and two break-vans, one at each end of the train. It left Broad-Street at 5.52, and was running four minutes late when the collision occurred at about 6.38 p.m.

Evidence.

The engine-driver, *Robert Hines*, states that he left Totteridge about 6.36, and it was a very dark night, with a drizzling rain. He was travelling at his usual speed, about 30 miles an hour, and was passing the level-crossing near the High-Barnet distant-signal, when his fireman said to him "Oh! Bob, look out," He then saw that there was some vehicle in front of him. He thought, at first, that it was a train standing on the main line without any light, but instantly his engine came into violent collision with what he afterwards found out to be a carriage. His engine broke away from his train, as a result of the collision, and drove the empty carriage in front of it, for a considerable distance. He thought when he stopped, that his engine had become detached, and was about 50 yards in advance of his train. The draw-bar hook of the van behind the engine was broken. The distant-signal from the High-Barnet station was at "danger" at the time. He was injured in the arm and in the back, and was off duty 11 days in consequence.

The fireman, *William Hancock*, who was riding with the above witness, saw the empty carriage in question running down the embankment towards his train, when he was three or four yards from it, and the collision then immediately occurred. He was thrown down on the foot-plate, and was severely shaken. He was off work for 10 days.

The guard of this train, *William Cox*, was riding in the break-van at the rear of the train, and was sitting on the upper seat of his van looking to the front, from the dome window, when he suddenly felt the shock of the collision, and was thrown to the bottom of the van, but was not injured. He jumped up, applied his brake, and stopped his train. He had "Clarke's improved brake" on his van, and on four carriages.

The signalman at the High-Barnet station, *Isaac Fairey*, has been doing duty as signalman for two years, and for five months at High-Barnet, in the service of the Great Northern company. He was in the signal-cabin when the 5.48 p.m. passenger train from King's Cross reached High-Barnet at 6.33, eight minutes late. He returned his signals to "danger" after its arrival, and entered the arrival in the train-book, and then went to collect the tickets of the passengers. Whilst he was so engaged, he saw the train moving backwards, and on going back to his cabin asked the porter what had been done. The porter replied, that he had put a carriage off into the siding. He asked the porter, "Who had pulled over the points;" the porter said "He did not know." The porter had not been there many days; his name was "Vang." He looked at the levers in the cabin, and found that they had not been shifted, and he then told Mr. Catte, the station-master, that the carriage must have run away down the main line to Totteridge, and that the North-London train had left Totteridge, as he knew by the signal on the bell in his cabin. He believes "King" was engaged in shifting the tail-lamps, but was not the porter who ordered the engine-driver to set his train back, with a view of shunting the carriage into the siding. He did not know who ordered the train back. He could not go to his cabin when he saw the train going back, because he was busy collecting tickets.

The porter, *Arthur Pidey*, who is stated to have been the cause of this accident, had been dismissed from the company's service, and did not attend my inquiry; but I learned that he signalled the engine-driver of the Great Northern train (5.48 p.m. from King's Cross) on its arrival at High-Barnet to set back, for the purpose of pushing a carriage at the tail of the train into a siding. He himself detached that carriage from the train, and he expected that the signalman would have reversed the points, to allow the carriage to run into the siding. As the signalman was otherwise engaged, and the points remained set for the down line, the carriage ran back along the down line, and met the North London train, as already described.

Conclusion.

This collision has resulted from the inadvertence of a porter employed at the High-Barnet station, who directed the engine-driver of a train to set back for the purpose of shunting a carriage, which had been uncoupled from the rear of the train, into a siding, during the absence of the signalman from his cabin, and without first ascertaining whether the points had been moved for the carriage to run into the siding. This porter had been for about three weeks in the com-

pany's service at High-Barnet, and previously for a week at King's Cross. He appears to have been dissatisfied with his duties at High-Barnet, and to have wished to return to platform duty at King's Cross, and he had for that reason resigned his situation at High-Barnet before the accident occurred.

With a view to the prevention of such an accident in future, the company have since inserted a pair of safety-points on the down line, at the south end of the High-Barnet station-yard. Another precaution which they might adopt, and are prepared to carry out, is that the signalman should not leave his cabin after the arrival of a train, to collect tickets, without first turning over the siding-points at the end of the down platform. This would prevent the possibility of any carriage, or any part of a train, running back from the platform along the down line, even though a mistake were made by a porter on duty, as on this occasion. Whenever the signalman is not able, on account of the length of a train, to secure the safety of the down line by thus shifting his points, it will, of course, be necessary for him to remain in the cabin.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 18th April.

GREAT WESTERN RAILWAY.

Sir, *Gloucester, February 15th*, 1877.

In compliance with the instructions contained in the Order of the 12th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the fatal accident on the 27th ultimo, to James Mann, an assistant foreman-platelayer in the service of the Great-Western Railway Company. This man was working with three others on the line of the Great-Western Railway Company between Standish junction and Gloucester, when he was run over and killed by the Great-Western Railway Company's engine, No. 1,211, which was returning, with a break-van behind it, from Swindon to Cardiff, after having taken a coal-train to Swindon. Another platelayer, William Stone, who was working with him, was at the same time seriously injured.

Description.

The Standish junction is 6¾ miles from the Gloucester station, in the direction of London.

The particular spot at which this accident occurred is about 3¼ miles from Gloucester and 3½ miles from the Standish junction.

The Great-Western and Midland Railways run parallel between Standish junction and Tuffley cutting, for a distance of about five miles; the two lines of the Midland Company being 12 feet 4 inches from the two lines of the Great-Western Company. The accompanying diagram contains a plan showing the various distances, and a section showing the gradients on this portion of the Great-Western Railway.

Between Standish junction and Gloucester there are three signal cabins; one at Haresfield, about a mile from Standish junction; one at Naas, about 1½ miles from Haresfield; and the other at the millstream, about 3 miles from Naas. This accident happened between the Naas cabin and the millstream cabin, about a mile from the former and 2½ miles from the latter.

The following evidence, referring in the first place to this particular accident, is directed in a greater degree to the general question of racing between the Great-Western and Midland trains, as brought forward by Mr. Whitcombe in his letter to the Board of Trade.

Evidence.

James Batt, the engine-driver of the Great-Western Railway Company's engine, 1,211, states, that he left Swindon at 8.40 a.m., on the 27th of January last, and after being delayed at Purton, at Minety, at Tetbury Road, and at Stroud, he left the latter station a little before 11.0 a.m., and passed through Standish junction shortly after. He had only an engine, tender, and brake-van, and he believes his speed was about 30 miles an hour before leaving Standish junction. He saw the Midland train a little before he left Standish junction. His engine was running 200 or 300 yards behind the tail of the Midland train from Standish junction to the point where the accident happened. He was running at the same speed as the Midland train. On reaching the scene of the accident he saw through a break in the steam from the Midland engine (which had obscured his view from Standish junction to that point) three or four platelayers on the line in front of him. He opened his whistle, shut off his steam, and reversed his engine. He did not see any of the men struck, but before he brought his engine to a stand, he said to his mate, "I am afraid we hit one of the men." He brought his engine to a stand about 300 or 400 yards after seeing the platelayers, and he then set back to see what had happened, and on arriving at the spot he found the platelayer who had been killed lying between the Midland and Great-Western lines. He was quite dead. He also found that another platelayer had been struck and injured in the arm. He brought the platelayer who had been killed, into Gloucester, in the van. He has been in the Great-Western Company's service for 12 years, four years as driver, and has frequently been in the habit of running between Standish junction and Gloucester. There was nothing unusual in the speed on this occasion, but he does not remember running in the same way with the steam from another train in front of him to obscure his view. He was due to arrive at Gloucester at 8.40 a.m., and was therefore about two hours late. It did not occur to him to draw back from the Midland train previous to the accident, but he will do so in future. His booked time to run between Stroud and Gloucester, a distance of 12 miles, is 35 minutes. He did not receive the proper train-order at the shed to get up in time to start, and the night pilotman would not let him go from the shed to the station with a verbal order. He would require a written order from the inspector at the station. He waited from 6.45 a.m. until about 8.0 a.m., when the order was received from the inspector, and he then started with his engine, in accordance with the orders of the day-foreman. He had the written order from the day-inspector at the station, but after this he was delayed waiting for some of the ordinary trains, and eventually started at 8.40 a.m., as already explained.

Alfred Davnald, fireman with the last witness, says the Midland train ran down in front of them from Standish junction until his engine struck the platelayers. He saw the platelayers about 200 yards before two of them were struck. He was on the left-hand side of the engine. The driver saw them first, and said "stop." He applied the brake, and at the same time saw a man fall, who appeared to have been struck by the engine. The steam was blowing off the Midland train back on to the road on which he was running, and he therefore could not see the men sooner. He believes he was running about 30 miles an hour at the time.

To accompany Captain Tyler's Report dated the 15th Feby 1877

GREAT WESTERN RAILWAY.

MAN KILLED AT TUFFLEY NEAR GLOUCESTER. JANUARY 27TH 1877.



Thomas Howells, the guard of the same train, states, he left Swindon at 8.40 a.m. on the 27th of January with a return coal-train. He arrived at Purton at 8.50 a.m. and left at 9.5 a.m., left Tedbury Road at 10.10 a.m. and Stroud at 11.0 a.m., reached Gloucester at 11.40 a.m. He was running about two hours late, as he ought to have left Swindon at 6.45 a.m. His engine was late out of the shed, and the foreman told him to wait for a train coming in from Paddington, to see if there was anything for him to take on. He believes his engine was running about 25 or 30 miles an hour. After passing Standish junction he was not aware of the accident until he saw the fireman applying the break, when he thought he had run over one of the platelayers. He does not know where his engine came to a stand, but he thinks it was south of the Tuffley Bridge, and somewhere near the heap of timber south of that bridge. He does not remember saying on a previous occasion that it was within 40 yards of the Tuffley cutting.

Charles Rustell, said he was working as one of a gang of four platelayers on the Great-Western Railway on the 27th of January; he was near the 110¾ mile post. He was placing a rail alongside of the line and outside the down main line for measurement. He was going to cut it to the proper length in the place of a rail to be taken up. James Mann, the deceased, was at the other end of the same rail, and had his back towards Standish junction. He himself had his back towards the Midland line. He saw one Midland train coming from Bristol and another going to Bristol, but he saw nothing of the Great-Western engine until he suddenly heard a whistle; he cannot say how far it was from him on account of the steam from one of the Midland trains. He jumped towards the Midland line, and so escaped from being run over. He saw the engine strike James Mann, but he did not see it strike William Stone. Has been working on this line for five years, and has several times seen the trains running together on parallel lines, but he has never before been in danger on that account. He should think the Great-Western engine ran about half a mile after the accident before it pulled up.

George Messenger, was a packer in the same gang with the former witness. He was turning himself round to fetch a spanner to unloose one of the bolts, when he heard a whistle from the Great-Western engine; he cannot say how far it was from him on account of the steam and smoke from the Midland express train. He jumped towards the up-line when he heard the whistle blow, and thus got out of the way; he did not see the other men struck. He found afterwards that James Mann had been killed on the spot, and William Stone had been injured. He has been working there nearly 12 months, but has not been in danger in the same way on any previous occasion. He saw the engine come to a stand about half a mile from the accident, between the mouth of Tuffley cutting and the quarter mile post. He did not see any target on the train which preceded the Great-Western engine, but thinks there ought to have been a target on the preceding train to give notice of the approach of this train. He expressed his views on this point to Rustell immediately after the accident. There having been no target on the preceding train, he did not expect this one to come, nor did he know that the train had been running that week; he has no book of working time tables. The ganger was working some distance away with another lot of men.

John Davies, inspector of the permanent way between Gloucester and Kemble, including the Cirencester branch, altogether about 25 miles, was then called. He was at Swindon when the accident happened. He thinks all his men can do is to keep a sharp look out, especially when the steam from a train is beating down on the line. Targets are only used for goods trains and not specials. There are other trains entered in the time tables to run when required only, which do not carry targets. He has known targets used for such of the trains as have not run for several days. The conditional trains are often run without the preceding train carrying a target.

George Albert Dymock, a farmer of Tuffley, was then called, and said he was standing on the Stroud road, at a place called Tuffley Knoll. He saw the Midland pass the Great-Western train, which was running parallel with the last few carriages of the Midland train. He saw the engine and van slacken speed and stop near the mouth of the Tuffley cutting; the Midland train had passed it and run away towards Gloucester. His attention was particularly drawn to the circumstance of the engine stopping and backing; he then proceeded on his way to Gloucester. On the following day (Sunday) he went to the scene of the accident, and he then noticed, by the quarter mile post, the distance the engine had run before stopping. He heard Howell say before the coroner that the engine had pulled up about 40 yards from the cutting. He did not notice the train stop until after the accident; he heard a slight whistle, his attention being first drawn to the train by the whistle. Has lived at Tuffley for 20 years, and during that time has noticed the Great-Western and Midland trains racing each other. He considers the trains racing when going at an unusual high rate of speed. This racing he has seen frequently, and as an instance says that on 2nd of February he went to a little entertainment (a penny reading) at Tuffley. He was coming from Tuffley at nine o'clock p.m. and had occasion to pass under the railway bridge at Tuffley Lane, when he saw a Great-Western train leading a Midland train. The fire and steam was coming merrily out of the funnels, which he does not often see. They were as he thought going at excessive speed; they were both passenger trains. He considers the trains were racing at the time of this accident; they were both going very fast.

Mr. George Cummings, a saddler of Southgate Street, Gloucester, then gave evidence to the effect that some time during the last 12 months he travelled from Gloucester to Stonehouse; is not quite sure whether in the morning or evening. He remembers racing with some other train, the train which he was in passing the Midland train. Was pleased that his train beat the other, and waved his hand to the people in it as he passed; they did not return the compliment or appear to like it. He does not remember any other occasion of the sort.

Mr. Francis Jones, clerk of the peace and under sheriff for the city of Gloucester, also an undergraduate of the University of Oxford, said that during term time, about 12 months ago, he was in the habit of passing between Gloucester and Oxford both ways about six times a week; he therefore had ample opportunity of observing the running of the trains between Standish junction and Gloucester. Almost every morning he came from Oxford by the 6.0 a.m. train from London. This train used very frequently to meet a slow train from Bristol, and he has many times noticed that they have come neck and neck at about Haresfield, or between that and Standish junction. From his observation he considers that there is a decided tendency on the part of both companies to race one another, and he has on many occasions heard remarks from servants of both companies as to which engine was for the time being the better of the two. He has also very frequently, when looking out of the window of the Great-Western train, seen the Midland driver turn the circular reversing gear to its full extent for forward motion, and as he thought for gaining the utmost speed possible, and he recollects on one occasion seeing the Midland train, on this being done, run completely away from the Great-Western train, and as it was running away he saw not only the guards of the Midland train but many of the passengers put their heads out of the windows, as much as to say "we have done you to-day." He has noticed great interest

being evinced by the fair sex as to the success of the trains in the race, and after some three or four years of travelling over that portion of the line he believed that on many occasions the trains had been going at a speed at which they had no right to travel. Within the last few months he has not travelled so much, and therefore has not had the opportunity to notice whether the racing still exists. He does not recollect the names of any of the servants who have taken part in the demonstrations to which he refers. He has been in a train when it has run parallel with another, when the officials have not or appeared not to take any notice of each other; and he also wished to state that he had been treated with kindness and courtesy by the servants of both companies, more particularly by those of the Great-Western Company.

William Edward Smith, solicitor, of 6, Regent Street, Cheltenham, said that some time back he had a private residence at Stroud, and held a season ticket between Stroud and Cheltenham for about two years; he now holds a season ticket between Gloucester and Cheltenham. During the time he travelled between Stroud and Cheltenham he repeatedly saw racing between the Great-Western and Midland trains on the line between Gloucester and Standish junction, more particularly between those trains on the Great-Western and Midland lines which left the Stonehouse stations respectively at about 9.10 a.m.; this racing occurred more especially before the last newspaper train from London was put on. He has also often seen racing between the trains travelling over that part of the line at about 10 o'clock, and more particularly between the Midland train leaving Gloucester at 7.0 p.m. and the 6.45 p.m. on the Great-Western, the latter train having been late and the former punctual. He states that the danger connected with the practice has been a general subject of complaint between the passengers; frequently the Midland train had to stop at Haresfield, but if it had not it generally overtook and passed the Great-Western train. He said that Mr. Jackson, solicitor, of Stroud, Mr. Jacobs of Ebley, and his son, could give evidence, also Mr. Godsell of Stroud, whom he believed had called the attention of the station-master at Stonehouse to the racing that took place. He himself had also called Mr. Grierson's attention to the matter, in his letters referring to other business; also the attention of Mr. Grover or his assistant when at his office settling some matter relative to a claim.

Mr. Grover, who was present on behalf of the Great-Western Railway Company, denied that his attention had been drawn to any racing by Mr. Smith, and asked for the date of the claim referred to by him, but Mr. Smith was afraid he should not be able to give this.

Mr. Smith then continued with his evidence. He remembered when in a Midland train seeing a number of militia men, who had been disbanded at Cirencester, in a Great-Western train. The trains were racing, and one of the men having taken off his coat and got it ready in his hand, hung out of the window as far as he could, and tried to hit with it some people who were looking out of the Midland train. He considered it was very dangerous. He has noticed on more than one occasion that a guard has put the break on to prevent the racing; thinks it was guard Walters. He only tells that the break was put on by hearing a grating noise. He thinks that from the motions made by the engine-driver and stoker that it was their intention to race. The last occasion he remembers was some time before Christmas, but he is unable to say in what train he was, or give an approximate time.

Mr. Elizah Jacobs, of Ebley, near Stroud, banker in the Gloucestershire bank, said he has been in the habit of travelling over that portion of the line between Standish junction and Gloucester within the last seven years. He has occasionally noticed racing between Great-Western and Midland Trains, between Standish junction and Gloucester. He was in one or two races just before Christmas, but does not remember any since that time. The racing was only occasional throughout. Very frequently the trains would, when behind time, go as fast as when they were racing. He never felt any inconvenience or alarm from the racing, but rather liked it.

Warnford Smith, signalman at Standish junction; in the service of the Midland Railway company for over seven years. He produced two books, one the record book of the Midland trains, and the other the record book of the Great-Western trains. On the 27th of January the Great-Western engine and van is entered as having passed his cabin at 11.7 a.m., and as having been telegraphed back as having cleared the Haresfield cabin at 11.9 a.m. That was about the right time for a passenger train, and as this was only an engine and van it would be the same.

Referring to the Midland book, the Midland passenger train in question was telegraphed to him at 11.5 a.m., passed him at 11.7 a.m., and was cleared from Haresfield at 11.9. The Great Western engine was about a quarter of a mile behind the Midland train; they both passed him, as far as he could judge, at a speed of about forty miles per hour. He gets his time every morning in the cabin by the instrument; he regulates the clock accordingly; he did not alter it on this occasion; he only takes duty one day a week as relief man.

Jonah Knight, is a signalman in the employment of the Midland Railway Company at Haresfield, and has been so for about three years. He produces his Midland train record book, which shows that the Midland passenger-train was telegraphed to him from Standish junction at 11.5, passed him at 11.7, and was cleared from the Naas cabin at 11.9. He also has his Great-Western train book, showing that the goods-train in question was signalled from the Standish junction at 11.6, passed him at 11.8, and was cleared back from the Naas at 11.10. The passenger-train was going at the ordinary rate; he did not take any particular notice of the speed of the goods-train. He gets his time by the Haresfield station clock, and that clock is regulated by the first train out of Gloucester.

Thomas Jones, is signalman at Naas, in the service of the Midland Railway Company; he has been so for about five months. He produces his book showing the signals in regard to the Midland train. The train in question was telegraphed to him from Haresfield at 11.10; it passed him at 11.12, and it was cleared from Tuffley at 11.15; that was the usual time for a train to run between Naas and Tuffley. He also produces his record book of the Great Western trains, showing that the Great Western engine and van were telegraphed to him from Haresfield at 11.10, passed him at 11.12, and were cleared from Gloucester at 11.30. He had another train to attend to on the down line about the same time, and did not notice these trains as they passed him; there was some little difference between them, but not enough to make a difference in booking. He has no speaking instrument in his cabin from which he can get the time; he generally gets it from the station-master at Haresfield. He believes his clock was right on that morning.

Robert John Henley, of No. 2, Regent Street, Gloucester, said he had for many years been travelling over that part of the line between Standish junction and Gloucester. He has frequently noticed the trains running parallel to one another, but cannot say if they were racing.

Mr. William Nicks, of Greville House, Gloucester, a magistrate, then said that about 10 years ago he was travelling a great deal; there was a little bit of line which he did not like, the bit from Standish junction to Gloucester. It was then laid with Burlow rails instead of wooden sleepers, and he was always afraid

that one of the rods would snap, the line bulge outwards, and a fearful accident occur. There was constant racing between the trains at that point, and in fact it was impossible to travel over it without having a race; he had seen racing scores of times. He once wrote a letter to a Gloucester paper, expressing his fears of an accident. A few days after he saw Mr. W. P. Price, who rather blamed him for writing to a newspaper, and said he ought to have written to him or Mr. Allport. Mr. Price was at the time Chairman of the Midland Railway Company. He told Mr. Price that he felt so certain that the officials knew of the racing, and as he thought winked at it, that he thought it better to write to the newspapers, with a view of putting a stop to it, and also thinking it better that a little opprobrium should be thrown on the railway companies than that an accident should occur. Mr. Price asked him that if ever he saw racing again to write to him. He believed some instructions were given in regard to the matter, as the racing ceased for a time. 12 months afterwards he saw racing again, and he wrote to Mr. Allport, informing him of the occurrence; his letter was acknowledged, and he noticed the racing was again stopped. There was a common rumour that the engine-drivers used to have bets on, and that they used to have a supper every Saturday night. He said every one in Gloucester knew that this racing went on continuously. One night, a little before the alteration of the guage (on May 1872), he was in a train from London, and when at Stonehouse he heard the driver of his train and the driver of the Midland train whistling like two call-birds. When the trains got to Standish junction they were alongside, and they had the most fearful race he ever saw in his life. His train was the 4.50 p.m. from Paddington. He could produce three gentlemen who saw it as well as himself. He believed the racing was chiefly due to a belief among the men that the broad gauge could beat the narrow. Since the alteration of the gauge he had not seen any racing.

Mr. Hallard, Midland Railway Company's inspector, said he remembered the complaints made by Mr. Nicks, and instructions were given at the time that the times of all trains passing Standish and Stroud Road junctions should be taken and sent to Derby every week, where they were examined, with a view to putting a stop to the racing. Since the introduction of the block-system this was unnecessary, as the signalmen's books showed the times.

Mr. Grover, Superintendent of the Hereford division of the Great-Western Railway, including that portion of the line between Gloucester and Swindon. On behalf of the Great-Western Railway Company, he wished to say that he travelled almost daily over the line between Standish junction and Tuffley, but had never seen any racing, nor had his attention been drawn to it. He showed from time tables four trains a day only are anywhere near the Midland trains, and in these cases the times varied from 12 to 26 minutes. When trains were late, they might occasionally run faster than usual. If complaints were made against any engine-driver running at excessive speed, he would be punished with a view to its prevention. He was not aware that this inquiry would have resolved itself into a question of racing. From the returns supplied to him, he was enabled to say that the trains were very punctual now; he could not speak as to the punctuality of the goods trains, but there was nothing in their being two hours late, especially in the case of a conditional goods train.

Mr. Lindsley, superintendent of the Great-Western Railway Locomotive Department, said he wished to confirm the evidence of Mr. Grover as to the punctuality of the passenger trains. It is his opinion that there is little, if any, fault to be found with the goods trains. The train in this case was started late, owing to some misunderstanding at Swindon. He has never had any complaints of racing since the alteration of the gauge, but previous to that he had heard of it and steps had been taken to prevent it.

Mr. Whitcombe, solicitor, of Tuffley, said he thought he was justified, from the facts elicited by this inquiry, in saying that the platelayers had not sufficient protection. He said the rules appeared to be drawn up simply for the protection of passengers, who in the case of an accident could claim compensation, and he contends that even by their own laws the railway companies were bound to protect their men. These four men were working without any protection whatever, whereas if there had been any risk to the train the greatest protection would have been given. With regard to the general question of racing, it was idle to contend that it did not exist or was not proved, and notwithstanding all that had been said, he should like to examine the railway companies books and ascertain how many trains during the last six months had run together on this piece of line. If racing was not proved, he should like the inquiry to be adjourned that he might get further evidence upon it.

Conclusion.

I found that there was a strong feeling in the neighbourhood of Gloucester, Stroud, and Cheltenham, with regard to the racing of trains on the above portion of the Great-Western and Midland Railways, and I therefore thought it right to give considerable latitude to the inquiry, and to afford ample opportunity for evidence on the subject. From the above statements there can be no question that there has been such racing, which has been more frequent in past than in recent years, and I have no hesitation in recommending that it should be prohibited and prevented. It is as much to the interest of the Companies as for that of the passengers that all racing should be stopped, and I am quite sure that the two Companies will with that object combine in punishing any of their servants, whether encouraged by the passengers or not, who engage in the practice.

In the particular case under consideration, of the unfortunate and fatal accident to the platelayers, it is not, however, a question of racing. The Great-Western train was running, according to the evidence of the engine-driver himself, at the same speed as the Midland train; but the risk incurred was not in consequence of the speed at which the train travelled, but in consequence of the want of judgment, to say the least of it, on the part of the Great-Western engine-driver, in keeping, as he did, close behind the Midland train, with the smoke and steam from its engine blowing across the line on which he was running, and preventing him from seeing the platelayers and the platelayers from seeing his engine. It was that want of judgment and of caution which led to the present lamentable accident.

I have, &c.

H. W. Tyler.

The Secretary,
Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Great Western and the Midland Railway Companies on the 9th March 1877.

GREAT WESTERN RAILWAY.

SIR, *Chester, 24th February* 1877.

IN compliance with the instructions contained in the Order of the 3rd instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 31st ultimo, near the Saltney station of the Great-Western Railway.

In this case the 8.15 p.m. goods train from Birkenhead for Bristol, and the 3.30 p.m. passenger-train from London for Birkenhead, came into collision, first the former train, and then the latter train, within a minute of each other, with some goods waggons which had been thrown off a siding in the dark, whilst the 12.15 p.m. goods-train from Wolverhampton for Birkenhead was being shunted back into a siding. Neither the engine nor any of the vehicles were thrown off the rails in the goods-train, which first struck the waggons, but one waggon in that train was damaged. The engine, tender, and five vehicles of the passenger-train were all thrown off the rails, the last break-van only of that train remaining on the rails, but neither the engine nor any of these vehicles was seriously damaged. Two goods waggons from the siding, which had been thrown across the main-lines, were broken up, and seven other waggons standing in the siding were knocked off the rails or damaged.

Four passengers have complained of injury, and the fireman of the passenger-train had his hand scalded in consequence of the gauge-glass of the engine having been fractured.

Description.

The Saltney station is about two miles and a quarter on the south of Chester. On the south of it there are connections at the Dee junction with the Saltney goods-yard, which is the principal goods-yard of the port of Chester, on the west of the main-line; and there is a siding leading into a brick-yard on the east of the main-lines. On the south of the above goods-yard there is also, on the west of the main-line, a siding 430 yards in length, known as the long siding, which is connected with the main line at the Dee junction only. It was from this siding that the waggons which fouled the main-line were pushed. The points and signals of the Dee junction are all worked from a frame outside of a pointsman's hut, but the interlocking and block systems have not yet been introduced on the portion of line between Chester and Rossett, seven miles south of it. At the end of the long siding there is a wheel-stop composed of earth, retained by timber sleepers.

Evidence.

The passenger-train in question consisted of an engine and tender, four carriages, and two break-vans. It left Wrexham at 10.5 p.m., and Gresford at 10.14 p.m., being seven minutes late from Wrexham.

The engine-driver, *Evan Davies*, found the distant and home signals all right for it to run through the Dee junction. He could see them from Balderton, a distance of two miles, as the night was clear, though dark. He met a goods-train at the Green-Lane level-crossing, about 800 yards south of the junction, and the engine-driver of that train showed him a red light in passing. Seeing the goods-driver shut off steam, he looked again, and saw him shake a red light, and knew therefore that something was wrong. He shut off his own steam. He was going at a pace of 35 or 40 miles an hour. He reversed his engine and whistled for the break. By the time he had done so, his engine struck what he believed to be a pair of wheels, and left the rails, and came to a stand (after running through the ballast, and grazing some of the waggons in the siding) in about 50 yards after he first struck the wheels on the main-line.

The fireman, *Joseph Dodd*, confirms the evidence of his driver. He applied his break at once on seeing the red light. He was thrown into the corner on the left hand side of the engine, and his hand struck against the gauge-glass and broke it. His hand was injured, and he was off duty nine days in consequence.

The head-guard, *William Beckley*, was riding in the last break-van at the tail of the train. He was not aware of anything being wrong until he felt the shock of the first collision, by which he was thrown down in his van. He heard no whistle from the engine, or anything to prepare him for the shock.

The under-guard, *Henry Gooding*, was riding in the break-van next behind the tender. He heard the break-whistle sounded from his own engine and applied the break. This was about 300 or 400 yards before the point of collision. He did not see anything of a goods-engine. He was standing at his break when his van got off the rails, and he was thrown down. He was not hurt so as to be obliged to leave his work.

The Bristol goods-train consisted of an engine and tender, 17 loaded and 12 empty waggons, and a break-van. It left Chester at 10.12 p.m., being two minutes late, and the engine-driver, *John Roberts*, was slackened at the junction by signals. He passed through Saltney very slowly, and then increased his speed to about 15 or 20 miles an hour. In running at that speed near the end of the long siding, south of Saltney, he felt his engine strike against something. He did not know what it was. He blew his break-whistle, and did his best to stop his train. Whilst doing so, he heard a passenger-train coming in the opposite direction. He showed a red light to the driver of the passenger-train near the Green-Lane level-crossing, and he brought his train to a stand with his van at that crossing. He found, on examination, that his engine was slightly damaged on the right side, the buffer-casting was broken, and the outside rod slightly damaged. The breaksman came to his engine, told him that the passenger-train was all across both roads, and that he was to go forward to the next crossing, and stop all trains.

The fireman, *John Williams*, has nothing to add to the above evidence.

The Wolverhampton goods-train consisted of an engine and tender, 26 loaded and one empty waggons, and a break-van. It left Wrexham at 9.45 p.m., one hour and 40 minutes late, having been detained for roadside work.

The engine-driver, *George Hilton*, arrived at the Dee junction at 10.15 p.m., and then, having received orders on leaving Wrexham to go on to Saltney and shunt for the passenger-train, he ran forward over the points in readiness to do so, and receiving a signal from a hand lamp to set back into the long siding he did so. Whilst he was so setting back he received a green light from either the pointsman or the guard, which he understood to mean that he was to back steadily into the trucks already in the siding. He knew there were trucks, as he had caught sight of them in passing. In backing his train he felt it go, first against the waggons in the siding, and then he received a green light, until he felt an obstruction which he supposed was caused by the waggons behind

his train coming against the stop-block. He then found that his train was too long by an engine and five waggons to be put into the siding. He, therefore, on five waggons being hooked off from the remainder, went forward over the compound, backed across to the up-line, and ran forward into the goods-yard, and waited for the two trains to pass, the goods-train on the up-line, and the passenger-train on the down-line. He saw the goods-train pass immediately afterwards, and heard it strike something near the end of the long siding, and he heard the driver whistle for the breaks. He got off his engine, went on to the main-line to see what was coming, and he then heard the express passenger-train coming. He was aware that the passenger driver shut off steam before the collision occurred. He went down to the spot, but finding no one was hurt, he went back to his own engine without examining the waggons struck by the two trains.

The fireman, *James Avery*, has nothing to add to the evidence of his driver. He also felt his train go against the waggons in the siding, and fancied that it had been stopped by the block when it came to a stand; and was not aware that anything was the matter until after going into the goods-yard, when he heard the up goods-train strike something as they passed.

The head-guard, *Thomas Penn*, was riding in the break-van at the tail of his train until it reached the Dee junction. He then stopped and received a signal from the pointsman, and repeated it to his driver, showing, first, a white light for them to come back, and then a green light to come up to the waggons in the siding, and then a red light, because he thought he was going back rather fast, and to warn him that he was close to the waggons. He was standing nearly opposite to the pointsman's box, and he did not go south of this cabin until the train had nearly stopped. He then, finding that the train would not all go into the siding, went to unhook five waggons from the remainder, that the engine might draw them forward and take them to the goods-yard. He noticed as the Bristol goods-train was passing that one of the waggons was making a "squawking" noise. He afterwards heard a noise as the goods-train was passing near to the long siding, and made a remark to the breaksman and yardsman, who were standing near him, that he thought the "squawking" waggon must be off the road. He heard the driver of the goods-train open his break-whistle. He went afterwards to examine the spot, and found (he does not know how many) waggons off the road, as well as the engine and some of the carriages of the passenger-train. He noticed a waggon on the stop-block, but cannot say whether there were any wheels under it.

The under-guard of this train, *Samuel Henry Preece*, rode in the van at the back of his train. As it was backed down the long siding he did not see any signals, but left his mate to do so. He was alone in the van. He was steadying his train back with his break. The train did not hit the waggons in the siding unusually hard. He thinks there were two lots of waggons that were hit as they backed down the siding. He felt no jerk. The train stopped dead, as he supposed, against the stop-block. He then took the lamps off his van and went towards the engine, but before he got to the engine the Bristol goods-train passed. He heard one of the waggons squealing, and when he afterwards heard a noise he thought that something had happened to that waggon.

Martin Gibbons, the shunter on night duty at Saltney, has been at Saltney six years, two years as shunter and night watchman. The Wolverhampton goods-train arrived at the Saltney goods junction at 10.15 p.m; the engine-driver drew over the points and at once backed into the siding. He backed in steadily and stopped. The siding would not hold the train, and the guard hooked off five waggons, and the engine-driver drew ahead, backed over the up-road, and then crossed into the yard. Did not hear any noise or crash, and was not aware anything was wrong until the up-train ran into the waggons which had been pushed out of the siding. The guard showed the engine-driver a green light to call him back. He believed the breaksman remained in the van for the purpose of changing the lights, so as not to stop the passenger-train; at any rate the lights were taken off and placed inside the van. He cannot say whether the breaksman showed any light to the engine-driver backing, but if he did, he did not see it. Whilst the train was crossing with the five waggons, he heard the Bristol goods-train whistling for the distant-signal from the Holyhead junction, and after the train had passed, he heard the danger-whistle blowing.

Robert Williams, pointsman at Saltney, joined the service in November 1855, was transferred from the Shrewsbury and Chester Company, and has been at Saltney ever since. Has received 20 bonuses of 5*l.* each for good conduct. Was on duty on the night of the 31st of January. There were no trucks put in the long siding after he came on duty until the arrival of the Wolverhampton train at 10.15 p.m. The engine-driver ran over the points, and he signalled the train back. The engine-driver did so at once, until he came to a stand. He was not aware whether it was five or six waggons that were short of the train going into the siding. He then shouted to the guard to unhook the waggons clear of the points, and somebody did so. He then called the engine-driver ahead, and shunted him across the up-road, and thence into the yard; that was to clear the up-road for the Bristol goods-train. As soon as he signalled the Bristol goods-train it passed, and he then heard the danger whistle. As soon as the Bristol goods-train whistled, the passenger-train ran into the waggons that had been forced across the line. Of course he was not aware the waggons were across the line at the time. The siding holds 70 to 80 waggons; he has known 80 waggons to have been in when they were chiefly hoppers. He is not aware how many were in the siding that night. The Wolverhampton train had a large number of waggons on, but he did not count the number. The Wolverhampton train has often shunted before. He asked his mate, when changing duty, how was the siding, and he replied there were a good many in, but he considered there was room for a train. The guards were in their van as the Wolverhampton train passed into the siding. He does not know whether they got out of their van or not, as he was attending to the points, and could not see.

Conclusion.

This collision was fortunately unattended with any serious injury to any of the passengers, but it might easily have been of a much more serious character. It appears that there were 43 waggons, loaded or empty, in the long siding before the Wolverhampton goods-train was backed into it; and that these waggons had to be pushed back against the stop-block by the engine-driver at the same time that he pushed back his own train. This was an awkward operation for the engine-driver to undertake in the dark, and there is no evidence of any want of caution on his part in performing it. The guard and breaksman of this Wolverhampton train contented themselves with observing that their own train went back properly into the siding, and were engaged in providing for the leading end of it, which could not be placed in the siding; but neither they, nor the signalman on duty, nor the night-watchman, took any trouble to ascertain whether the waggons behind the goods-train were clear and safe before the main-line signals were lowered for the up goods and down passenger trains. None of them had the slightest suspicion, apparently, of anything being wrong as regards any of those waggons. There is no evidence to show whether the empty waggons which were

pushed off the siding across the two main-lines were so pushed by being forced over the stop-block in the first instance, or whether they were merely pushed outwards in shunting back; but it is certain they were thrown across both the main-lines as the goods train was shunted back, and they thus formed serious obstructions in the way, first of the goods-train from Birkenhead which was travelling on the line further from the siding, and afterwards of the express-passenger-train from London, travelling along the line nearer to the siding.

It was most fortunate that the engine-driver of the goods-train was able, after his engine had struck the waggons, to warn the engine-driver of the passenger-train, about 800 yards on the south of the waggons, of the obstruction which lay in the dark across his path. Otherwise the engine of the passenger-train would have come into collision with the waggons at a speed of 35 or 40 miles an hour, with terrible results. As it happened, the engine-driver of the passenger-train might, if his train has been supplied with continuous breaks, have brought it to a stand short of the obstruction, within the 800 yards, and thus have avoided the collision.

It is very necessary that in future, both by day-light and after dark, the signalman should ascertain, either by looking himself when he is able to do so, or by employing the night-watchman or some other person to ascertain for him, that after every shunting operation at this siding the whole of the waggons are clear, and the main-lines safe for the passage of trains, before the signals are lowered for trains to pass in either direction. An instruction to this effect has, I understand, been issued by the officers of the Company since the collision. When the block-system is happily established on this portion of the Great-Western Railway, it will then no doubt also be the duty of the signalman to block back whilst shunting is being carried on in this siding, and to ascertain after each shunting operation that the main-lines are unobstructed before he gives "line clear" for a passenger-train to approach from either direction.

I have, &c.,

H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th March.

GREAT WESTERN RAILWAY.

Grange-Court, Gloucestershire,
February 15th, 1877.

Sir,

In compliance with the instructions contained in the Order of the 10th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident at Grange-Court station on the 7th instant.

In this case, after the 5.10 p.m. passenger-train from Hereford for Gloucester had been moved forward from the Grange-Court station, and had been brought to a stand, in order that a horse-box might be uncoupled and shunted back into a siding for a down train for South-Wales, the signalman pulled over the points of a cross-over-road, and the Hereford train in backing was divided, so that one part of it moved back along the up-main-line, and the other part moved back along the cross-over-road. Two third-class passenger-carriages were thus thrown off the rails, and other carriages were more or less damaged. One passenger only has complained of injury.

On the east of the Grange-Court station there is a junction between the line from Hereford and the line from South-Wales, and at the south of the main lines is a siding called the Walmer siding. This siding is connected with the South-Wales down-main-line on the east of the down platform, and 152 yards on the west of the east signal-cabin; and it is also connected with the up-main-line by means of a pair of points 151 yards on the east of that signal-cabin. These latter were the points wrongly moved by the signalman, so as to cause the carriages to leave the rails. They are the furthest points connected with the up-line, there being no points to connect this through crossing with the down-main-line. The east signal-cabin is on the south of the main-line and of the Walmer siding, and is provided with a locking-frame, connected with all the points and signals on the east of the station, which are all worked from this cabin. There is a main signal-cabin over the bridge on the west of the station, from which other points and signals are worked.

Evidence.

Thomas Bedenham, the engine-driver of the train in question, states, he reached the Grange-Court station from Hereford at 6.20 p.m., and drew up at the station-platform while the passengers were exchanged and the tickets taken. A porter came to him and said, "I want you to go over the top points, there is a "horse-box to be put off into the Walmer siding for "South Wales." As soon as the tickets had been collected he drove his train forward, the porter riding on the step of the engine; and when he had got to the top points at the top of the station, about 300 yards off, his mate said to him, "Whoa, there is a red light." He did not himself see the red light, but he shut off the steam, and brought the train to a stand almost immediately. His fireman then said to him, "There is a white light." He came back a little distance, and then his fireman again told him to stop for a red light. He then found that two of his carriages were off the road. He has never shunted a train in that way before. On all previous occasions he has stopped at the first junction points, and when the horse-box or vehicle to be taken off has been unhooked he has gone right away.

Joseph Lewis was the fireman with the last witness, and came with him from Hereford to Grange-Court station. He heard a porter tell them to go forward to put a horse-box off in Walmer siding, and then another porter came up to the engine and said the same thing. The first porter told them to go over the top points. They went ahead when they got orders to do so from the station, and stopped as soon as they got the red light. He does not know who gave it, but it was from the back of the train. He saw two white lights for "all-right" to go back, and told the driver to set back, and he then found a sudden stop. The porter who rode forward on the engine told them to set back at the same time as he saw the white lights. When they came to a sudden stop the porter said he thought there was something off the road. It was very dark the whole of the time.

David Warder, the station-master at Grange-Court, said he had been at the station four months; he was previously chief clerk at the Hereford station. He saw the passenger-train from Hereford arrive about 6.20 p.m. He understood there was a horse-box to be taken from it. He said to two of the porters, "There is a horse-box for Portskewett," you must take it over the points and push it back to get into the Walmer siding. This was after they had collected the tickets. He then asked Bullock, one of the porters, whether he had told the signalman in the west cabin. Bullock replied, "No." He told him to do so at once, and heard him calling from the platform to the west signalman. He rode forward in the middle of the train, and passed forward from the porter the signals to the driver. When he saw a red light from

the end of the train, he gave a red light towards the engine for the train to be stopped. The train stopped accordingly, and then a white light having been waved from the after part of the train, he waved a white light, and then two of the carriages went off the rails as the train was setting back. He did not communicate direct with the engine-driver or signalman. He was under the impression that the porter, Hoar, would have told the signalman in the east cabin as he passed what was to be done.

John Hoar, a porter at the Grange-Court station, was told on the arrival of the train from Hereford that there was a horse-box to be taken off, and he asked if it was to be put in the "cripple" siding. The station-master replied, "No, in the Walmer siding." The station-master asked if Walmer was clear, and he replied "down to the crossing." He jumped on the steps of the engine, and rode forward to tell the driver to draw over the points by the east-box, leading across the down main-line into the Walmer siding. When they got over the points he saw a red light waved, and the fireman saw it at the same time, and told the engine-driver. He then saw a white light for the train to go back; it went back, and then two of the carriages came off the rails. He thought the horse-box was for Grange-Court, as it was to be put off in the Walmer siding.

James Bullock, a porter at Grange-Court, said that after the Hereford train arrived, Mr. Warder, the station-master, told him there was a horse-box for Portskewett, and that it was to be put off in the Walmer siding. He was standing with Hoar when he was told this. He ran forward to tell the driver, but the train was just then on the start. He had just previously told the signalman at the west cabin that there was a horse-box for Portskewett. He jumped on the last part of the train, and rode forward with it, and he gave the signal for the train to stop when they had got near to the top points. It was a red light he gave, and the train stopped about two carriage-lengths over the points. Directly he showed his red light they began to slacken speed. He did not see anyone else give a red light, nor did he know at the time that the station-master was also communicating with the driver. When the train slackened sufficiently, he jumped down to unhook the horse-box, but before he had time to unhook it the train began to set back, and before he could give the driver a red light he saw the carriages off the road. He does not know who gave a white light for the train to set back, but is certain he did not give it himself.

Alfred Holder, guard in the service of the Great Western Railway Company, has been so for 25 years. He was guard of the train in question, and reached Grange-Court at 6.20 p.m. on the 7th instant. He had a horse-box at the tail of the train for Portskewett. It was partly unscrewed while the train was standing at the platform. The station-master said to him he wanted it over the points, to be put over the other side for Portskewett. He understood from what the station-master said to him that the train was to go to the furthest points. He saw a porter go towards the driver and speak to him, but did not hear what was said. When the train moved forward he rode on the upper step of his van. No one else was riding in or on the van. The hand in which he carried his lamp was inside his van, and therefore it could not be seen. The station-master rode on the footstep of a carriage in front of him. He did not make any signals of any kind, nor did he see anyone making signals to the signalman with a white light.

James Boyt, singalman at the east cabin at the Grange-Court station, has been so since the 8th of December. Formerly he was signalman at Minety station for three years. On the afternoon in question, he saw the train arrive from Hereford at 6.20 p.m. He thought when the train moved along first that it was going away without its tail-lamps, and he signalled to Oakle Street, the next cabin, to stop it; but when he saw the train stopping near his cabin, he thought it was going to do some shunting at the furthest points, and seeing a white light waved, he thought that it was intended for him to move the points. He did so, and then he saw it coming back before he had had time to give it the signal for it to do so. He is certain he saw a white light waved from the end of the train, but it does not appear who could have given such a light.

Conclusion.

This accident was evidently caused by a series of misunderstandings, and by the want of distinct instructions, on a dark evening, amongst the various servants of the Company at the Grange-Court station. After the Hereford passenger train had arrived, and the passengers had been exchanged and the tickets collected, the train was sent forward for the horse-box to be detached from it before it proceeded on its journey. The station-master instructed two porters as to the operation to be performed, but in such a manner that one porter understood that the train was to go forward to the furthest points, about 300 yards from the station, whilst the other porter understood that it was only to go forward to the junction-points, about 130 yards from the station. The east signalman was not informed as to what was required or intended. The station-master, riding forward on the train, simply repeated the signals sent him by a porter from the end of the train to the engine-driver; but the train was not stopped at the junction-points, as it ought to have been, for the horse-box to be put off. After the train had been taken forward past the furthest points, it was sent back, on a signal received from the station-master, and said to have been transmitted to him from the rear of the train; but the signal cannot have been so transmitted by the porter at the end of the train, as he was, with his lamp in his hand, between the horse-box and the carriage, to uncouple them, when the train began to set back. The signalman asserts that he saw a white light waved, which induced him to pull over the points connecting the through crossing with the up-main-line; but it is difficult to determine what, if any, white light the signalman could have thus seen. There were at that time seven vehicles in front of these points and four behind them on the up-main-line, and as the train set back two vehicles were thrown off the rails. The station-master has been properly reprimanded for not himself distinctly explaining to the engine-driver, and for not taking care that the signalman was informed of what was about to be done, and also for not so supervising the operation as to take care that the train was stopped at the junction points, with a view to the horse-box being taken off at those points. The signalman and porter have also been reprimanded, the signalman for working the points by which the accident was caused, without having a clear understanding as to what was to be done, and the porter for instructing the engine-driver to proceed over the furthest points without having a distinct order from the station-master to that effect.

I have, &c.
H. W. Tyler.

The Secretary,
Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Company on the 9th March.

GREAT WESTERN RAILWAY.

Board of Trade,
(*Railway Department,*)
13, *Downing Street,*
SIR, *3rd March* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 24th ultimo, the result of my inquiry into the circumstances which attended an accident that occurred on the 22nd February, at the Marsh Mills station of the Tavistock branch of the South Devon section of the Great Western Railway.

No persons were hurt, and no damage was done to the rolling stock.

In this instance, a six wheeled coupled saddle-back tank engine was engaged in slowly hauling some trucks out of the broad gauge siding towards the branch down line to Plymouth, about 6.0 a.m., and while passing along the cross-over road from the siding to the down line, the left leading wheel of the engine, which was travelling with the chimney in front, struck and mounted the point of the crossing, and then dropped off the rails, and ran a few yards before it was stopped. The crossing point is situated about 40 yards from the facing points on the broad gauge siding.

The engine, No. 1,231, had 17 inch cylinders and 24 inches stroke, the wheels being 4 feet 6 inches in diameter, and the total length of the wheel base being 15 feet 9 inches, made up of 7 feet 4½ inches between the leading and driving wheels, and 8 feet 4½ inches between the driving and trailing wheels.

This engine had only been working on the branch about one month, and was quite new. It also appeared that a similar engine had got off the line, at the same crossing point, on the previous day.

The curve of the cross-over road where the crossing point was struck, and mounted, is stated to have a radius of about nine chains, and at this point the line was about one inch wide to gauge, having been widened about half an inch, in consequence of the accident of the previous day.

On examining the cross-over road, it was apparent that it had not been properly laid in, and that the cause of the engines getting off the rails at this crossing was due to this cause, combined with the fact, that both the engines were new, and in consequence probably working rather stiffly.

The engineer of the line (Mr. Margary) stated that the laying in of the cross-over road would be altered, so that there should not be so much distance between the crossing points on the right and left rails.

I have, &c.,
W. YOLLAND,
Colonel, R.E.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th March.

GREAT WESTERN RAILWAY.

Board of Trade,
(*Railway Department,*)
SIR, 13, *Downing Street, 12th March* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your minute of the 27th ultimo, the result of my inquiry into the circumstances connected with the accident which occurred to a platelayer's trolley, between Marsh Mills and Bickleigh stations on the Tavistock branch of the South Devon section of the Great Western Railway.

A platelayer's wife was seriously injured, and the trolley was broken to pieces, with very slight damage to the passenger train engine. The permanent way was slightly damaged.

On the day in question, a broad gauge trolley, laden with old materials, left Marsh Mills station about 1.47 p.m., for the purpose of leaving those old materials at a waste place near the level crossing adjacent to the house of the ganger of the platelayers; and after the old materials had been unladen, the trolley proceeded on the way towards Bickleigh station, with five men and one woman (the wife of a platelayer belonging to the next length of line), riding on the trolley, which was intended to be taken off the rails at the level crossing of the Lee Moor tramway, distant about half a mile from Marsh Mills station: but before it reached the level crossing the trolley was overtaken, shattered to pieces, and the woman was badly hurt, by the 2.0 p.m. up passenger train from Devonport, belonging to the London and South-Western Railway Company.

The evidence on the subject is as follows:—

1. *James Holman*, signalman at Marsh Mills station, states: "That on the 23rd February, ganger "French, when passing here, told him that he was "going up to the level crossing near his house, or "just beyond it with a trolley, and he said that he "would be clear of the line long before the 2.0 p.m. up "narrow gauge passenger train was due: he told him "this at 1.47 p.m.: the 2.0 p.m. up train passed here, "after taking a ticket, at 2.14 p.m., and he does not "know anything respecting the accident: that it is "not the practice to caution the drivers of trains "when trolleys go up the line, and they are not "required to do so by the regulations."

2. *William French*, ganger 18 years next June, on the Tavistock branch, states: "That he was engaged "in removing old materials from Marsh Mills sta- "tion to a waste place where they stow old materials, "at the level crossing near his house, situated nearly "4¼ miles from Plymouth: that he told the signal- "man on duty at Marsh Mills station, what he was "going to do, and that his trolley would be clear off "the line before the up passenger train was due: that "he told the signalman at a quarter before two o'clock: "that he stopped at the level crossing to unload all "the materials, and he only had his tools on the "trolley: that when he had unloaded he considered "he had 10 minutes to get to Lee Moor crossing: "that he had four men with him, and a woman, the "wife of the ganger of the next length towards Tavi- "stock, was riding on the trolley: and all six were "riding when the engine came in sight: that they "did all they could to get the trolley off the line "before it was struck by the engine: that none of "the men were hurt: that he does not know at what "time the collision occurred: that the train was due "at Marsh Mills at 2.14 p.m.: that the company's "regulations require that he should have had a man "out with a flag, and that he usually observes these "regulations: that he thought he had plenty of time "to run up to the Lee Moor crossing, and never "thought of the flag signal, and when he came back "at night he found his watch was five minutes slow, "but he did not know that it was so when he started "with the trolley: that the accident occurred a short "distance on the Plymouth side of the 4¾ mile-post."

3. *David Dear*, engine-driver in the service of the London and South-Western Railway Company, states: "That in working the 2.0 p.m. up train from Devon-

" port to Exeter, and after leaving Marsh Mills " station and between there and the level crossing, " on turning a sharp curve, he observed a broad gauge " trolley on the line: that he immediately reversed " his engine, and put steam against her, and sounded " the break whistle, but was unable to stop in time " to prevent a collision, the distance being so short: " that the trolley was loaded with permanent way " materials, and a female was sitting on the right " front corner with her back towards the engine, and " when the engine struck the trolley, he observed her to " be knocked on to the side of the road: that he stopped " but could not ascertain her injuries: that he thinks " they were travelling at from 12 to 15 miles an " hour when he first saw the trolley, and from 8 to 10 " miles an hour when he struck it: that the trolley " was loaded or partially so: that he only saw three " men with the trolley, and there was a woman sitting " on it: that it occurred about 2.15 p.m.: that his " was a tender-engine, and he had four carriages and " two vans on, and his mate applied the tender break; " and that no one in his train was hurt: this caused a " delay of six minutes to the train: there were no sig- " nals out, and he was unable to stop before, it being a " sharp curve: this damaged the snow brushes; the " cylinder cock was broken off, and the rods of his " engine were bent."

4. *Thomas Higgs*, locomotive superintendent of the western district of the London and South-Western Railway, states: "That he was travelling with the " train in question, and there was no person back " with a flag to protect this trolley: that after he " found the engine was in a fit state to travel, he " sent the train on, and went and gave instructions as " to the removal of the poor woman who was seated " on the trolley at the time of the accident, and was " injured very badly; there was a deep cut at the " back of the head, but he could not see that any " bones were broken: that he was, however, of " opinion from the blow and position of the body " after the accident, that she must have been hurt " internally, and it is a question in his mind whether " she will recover: that the engineman and fireman " did all in their power to stop, but as the distance " was so short after coming out of the cutting, and a " very sharp curve, it was quite impossible for the " men to stop after seeing the trolley on the line: the " ganger of the length informed him immediately " that he had no man back: that the train consisted " of engine and tender, break-van, composite (first " and second), two third-class, composite, and a rear " break-van, with a guard in each van: the breaks " were single breaks: that he heard the driver whistle " for the breaks as they were on the little bridge over " the stream, at which time he thinks they might " be running 15 or 20 miles an hour, and the speed " had been reduced to about ten miles an hour before " the engine struck the trolley: the trolley was en- " tirely destroyed except one wheel: there was no " one in the passenger train hurt: the train was " delayed about six minutes."

From the preceding statements it will be apparent that the accident was due to the ganger of the plate-layers having neglected to send out a man with a flag to protect the trolley after the old materials had been unloaded, and it was on its way towards the Lee Moor crossing, and the ganger admitted that he was to blame for not having done so. He also stated that he was misled by his watch being five minutes too slow.

The portion of line where the mishap occurred is single and very much curved, so that the driver of the up passenger train engine could not have seen the trolley at a greater distance than 135 or 140 yards, and at this part there is a falling gradient towards Bickleigh of 1 in 188. I do not consider that any of the servants of the London and South-Western up passenger train were to blame. If the train had been fitted with continuous breaks throughout the length of the train placed under the control of the engine-driver, it is quite possible that the mishap would not have occurred.

It is not enjoined by the company's regulations, but in my opinion, when a trolley leaves a station loaded with old materials, on a single line, where the view at places is exceedingly limited, to be unloaded at another spot, the signalman should have instructions when handing the staff or ticket, to tell the driver of a train that there is a trolley ahead.

I have, &c.,

W. YOLLAND,
Colonel.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Great Western and the South Devon Railway Companies on the 19th March.

LANCASHIRE AND YORKSHIRE RAILWAY.

Board of Trade,
(*Railway Department,*)
29th January 1877.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 10th inst., the result of my inquiry into the collision which took place on the 4th inst., at Goosehill junction, near Normanton, on the Lancashire and Yorkshire Railway.

In this case, during a dense fog, the 11.20 a.m. passenger train from Manchester for Normanton, due at Normanton at 1.13 p.m., was, while stopped at the Goosehill junction down home-signals, run into by an engine and van proceeding from Wakefield to Normanton.

Complaints of injury have been received from four passengers.

In the passenger train the last vehicle had its buffers damaged.

The engine and van escaped without injury. No wheels were thrown off the rails.

At Goosehill junction, about half a mile from the centre of Normanton passenger station, the Midland Company's main line from London is joined by the Lancashire and Yorkshire Company's line from Wakefield; the lines being joint from the junction northward into Normanton station. The junction is protected by home and distant signals, the former being separated and placed at the fouling points. On the Midland Company's line the block system is in force up to the junction, but between Wakefield and the junction on the Lancashire and Yorkshire Railway it is not yet in operation. Three-eighths of a mile from the junction towards Wakefield there is a signal-cabin for Lock's colliery sidings, the up home-signal of which is close to the junction down distant-signal; this latter again being 590 yards from the fouling point of the junction. The junction down home-signals are about 90 yards outside the fouling point, or 500 yards from the down distant-signal on the Lancashire and Yorkshire Railway. The gradient near the junction is very slight.

The collision took place 430 yards inside the junction down distant-signal on the line from Wakefield, or 160 yards from the junction fouling point, the engine of the passenger train having been standing just opposite to the junction home-signals.

The evidence is as follows:—

1. *Thomas Dunkley*, 17 years signalman on the

Normanton station joint staff, nine years at Goosehill junction.—I came on duty at 6 a.m. for an eight hours shift. The Manchester passenger train arrived at the junction at 1.19 p.m. ; it was advised by instrument from Wakefield, and arrived in about five minutes. I get no announcement of trains from Lock's siding. My signals were against this train, as an up Midland coal train was being backed across on to the down main line into the goods yard, to clear the up-road for an up Midland passenger train due out at 1.18. The coal train had come through on the passenger line from Leeds. The signalman at the south junction (only 300 yards from Goosehill junction) had shunted the coal train. The down line was clear at 1.28, but the collision had occurred at 1.26, while the coal train was in the act of crossing. The day was very foggy. I had a fog signalman at the down home-signal, and one also at each of the down distant-signals. I could not see more than 20 or 30 yards. I could not see the engine of the Lancashire and Yorkshire train, nor the south cabin (about 300 yards). I did not hear the light engine whistle, but there was a Midland engine blowing off steam at the time. I work block system from my cabin southward on the Midland line, not on the Lancashire and Yorkshire line at present, and mechanical block between the south cabin and mine. If Lock's sidings up distant-signal is on, I caution up trains, but this signal is not visible in foggy weather. It must have been my home-signal fog signalman who stopped the Lancashire and Yorkshire passenger train. I heard a fog-signal go off behind the passenger train just before the collision. I did not say to the fog signalman Lee that I would not take off my down distant-signal at all, but that I would not take it off simply for his information.

2. *Joseph Hellick*, platelayer.—I went about 9 a.m. on the 4th to attend to the down home-signals at Goosehill junction. I stood where I could see the signals, on the Wakefield side of them. I remember the Lancashire and Yorkshire passenger train arriving. It ran over a fog-signal and stopped clear of the junction. I went back 34 yards (about the usual distance, from the tail of the train) and put down one fog-signal, and then came back to watch for one of the home-signals being taken off; and while I was standing watching for the signal, I heard another engine from Wakefield giving the junction whistles, coming, I thought, faster than it ought. I ran back, and had got as far as the last carriage but one when the collision occurred. The fog was so thick that I could not see the engine before it struck. I could not see the signal-cabin from where I put the fog signals down. The passenger train was knocked forward a little. I heard the last fog signal explode. The goods guard complained to me for not being further back. I should have started the passenger train by seeing the home-signal drop. The driver of the passenger train might have seen the home-signal, but there was the home-signal for the Midland line (on which line a train was due) also to attend to. I gave the passenger driver a red flag as he drew up.

3. *George Lee*, platelayer four months. I was fog signalling on the 4th at the Goosehill junction down distant-signal, on the Lancashire and Yorkshire line. I commenced doing this about 11 or 12 o'clock, when the fog, which had been prevailing all the morning, came on thicker. I stationed myself just as far as I could see the distant-signal, *i.e.*, about 80 yards from it. This signal remained on all the morning, but I did not keep a fog-signal down all the time the signal was at danger, but only for 15 minutes after a train had passed, the junction signalman having told me that he would not take his distant-signal off at all. I had one fog signal down (the clearing house rule says two) when the passenger train passed, another passenger train having preceded it less than 15 minutes. I put a fog-signal down as soon as this passenger train had passed, but I took it up before the light engine came, (thinking the passenger train had gone through, not having heard it whistle), though the distant-signal remained at danger. The light engine came up about eight minutes after the passenger train, going past me about four or six miles an hour. It almost stopped as it passed Lock's siding cabin. I showed the driver a green flag, but said nothing to him, nor did I hear the signalman do so. I did not hear the collision. I know the rule relating to fog signalling, though I have not had the new rule book so very long,—since about the beginning of December. I have been fog signalling at Wakefield yard three or four times, but in that case the signal I was attending to was worked regularly.

4. *John Lodge*, signalman seven years, all the time at Lock's siding.—I changed into the new box two or three years since. I cannot see my up home-signal. I pay no attention to the Goosehill junction down distant-signal with regard to the working of my own. The 4th was a very foggy morning. I could not see the down distant-signal from inside my cabin. Lee was standing just by my cabin. The Lancashire and Yorkshire passenger train passed at 1.17. It ran over no fog signal that I heard. I don't know whether Lee put down a fog-signal behind this train, but he followed it up towards the junction, and on coming back said he could see nothing of it. The light engine passed at 1.25, and ran over no fog signal, going no faster than I could walk. Lee gave the driver a green flag. My signals were off at this time. I only keep them on when anything is working at my cabin. I had a fog signalman at my down-distant signal. I was just coming out of the cabin when the light engine passed, but I did not check Lee for showing the driver a green flag. The previous passenger train had passed at 1 o'clock.

5. *Maurice Davies*, driver five years.—I was driving the 11.20 a.m. passenger train from Manchester for Normanton. The fog became bad all the way from Sowerby Bridge. We were about eight minutes late leaving Wakefield. I found no signals against me till I got to the Goosehill junction distant-signal which was on, although I had a green flag from the fog signalman. I took the green flag to mean that there might be something standing between the distant-signal and the junction. I stopped opposite the home-signals which were at danger, having run over a fog-signal just before. I could not see either the home or distant signal till close on them. I got a green flag also at the junction home-signals, but seeing the home-signal at danger, I stopped. After standing eight or nine minutes, we were run into by the light engine and van ; we were knocked forward about an engine-length. I had heard the junction whistle from the light engine and then the break whistles. There was very little injury. I shouted to the fog signalman to go back and protect us, and I saw him go.

6. *Richard Thomas Abbot*, guard four years.—I joined the Manchester train at Rochdale with the Liverpool portion, and we left Sowerby Bridge with seven vehicles, including a van next but one to the engine. We left Wakefield at 1.15, eight minutes late, with six vehicles, the four rear vehicles being all coupled to the van. We ran over a fog-signal between the Lock's siding cabin and the junction, and stopped at the junction, where I could see the home-signals : I could see just the length of my train. We stood three or four minutes before we were run into. I had taken my break off, and I was arranging my parcels at the time of the collision, and considered myself protected by the junction signals. I heard the light engine giving the break whistle, and was going to put my break on when the engine ran in.

7. *Henry Leake*, extra driver 2½ years.—I started from Wakefield at 1.20 p.m. on the 4th, with a van, tender first, to work a special yeast train from Normanton to Bolton. I found Lock's siding distant-

signal off, and also the home-signal, but the junction down distant-signal was on. I saw no fog signalman near this signal. I passed it at three or four miles an hour, having seen it about 70 yards off. I was running steady down to the junction, intending to stop at the home-signals, when I ran over a fog-signal before I had seen anything of the passenger train. My speed was three or four miles an hour. I gave the break whistle, reversed the engine, but had no time to get on steam; my mate went to his break. We then struck the rear of the train, but were not knocked down, and no damage was done to my engine. Had there been a fog-signal down at the distant-signal, I should have been running more cautiously still. I was engaged looking for the home-signal when I ran over the fog-signal.

8. *Walter Wadsworth*, extra fireman two years, agrees with his driver, and says he had not time to get his break on before the collision, after running over the fog-signal.

9. *Mason Clark*, spare passenger guard at Mirfield. I accompanied the light engine from Wakefield to work a special yeast train from Normanton to Bolton. I took no particular notice of signals till I saw the junction distant-signal at danger as we passed it, the speed being three or four miles an hour. I saw nothing of the fog signalman near it. We then ran over a fog-signal, and the driver at the same time whistled for the break. I had no time to apply it before the collision. I was not knocked down or injured.

This collision was primarily due to inefficient fog signalling at Goosehill junction, where, during the prevalence of a dense fog, the driver of the engine which came into collision with the passenger train was allowed by the fog signalman at the junction down distant-signal on the Wakefield line to pass that signal at danger, not only without being warned by fog-signals placed on the rails, but even with the affirmative signal of a green flag (happily not seen by the driver), although the fog signalman had no knowledge whether the passenger train, which had passed only eight minutes previously, was or was not standing at the junction home-signals. With such extraordinary behaviour on the part of a fog signalman as this, (that of the fog signalman at the junction home-signals, from whom the driver of the passenger train says that he received a green flag, although the home-signal was at danger against him, being—if the driver's statement is correct—equally reprehensible,) the driver of the yeast train engine is in my judgment deserving of very little blame. He was certainly proceeding cautiously towards the junction, and would have, no doubt, stopped at the home-signals had the passenger train, of which he had received no actual warning till he ran over the fog-signal, only 34 yards behind it, not been in his way. The rules relating to fog signalling are clearly laid down in the new rule book lately issued by the Lancashire and Yorkshire Company, and means should certainly be taken to see that they are understood and obeyed by the men who are entrusted with the duty, and who in this case were following their own devices.

It is to be regretted that block telegraph working had not been in force between Wakefield and Normanton before the collision, as it could then hardly have occurred. It is, I understand, shortly to be brought into operation.

The signalling arrangements at Lock's siding (in connection with Goosehill junction) are also to be improved, and in doing so the up home-signal should be placed so as to be visible to the signalman.

It was not judicious on the part of the signalman at Normanton south junction to allow a coal train to cross into the goods yard at the very time the Lancashire and Yorkshire passenger train, of which advice had been received from Wakefield as running about five minutes late, was due.

It is true that, owing to the interruption of telegraphic communication from the snow storm on the 3rd between Armathwaite (on the Settle and Carlisle line) and Cudworth, near Barnsley, on the Midland line, it was not known how late the Midland up train, due to leave Normanton at 1.18 (and for which the coal train was shunted), was running, but still it was known to be late; and there was no good reason, therefore, for detaining the Lancashire and Yorkshire passenger train; and without this detention the collision would not have occurred.

I have, &c.,

C. S. HUTCHINSON,
Major-General, R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th February.

LANCASHIRE AND YORKSHIRE RAILWAY.

SIR, *Dublin, March 5th*, 1877.

IN compliance with the instructions contained in the Order of 13th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 8th ultimo, at Hindley junction, on the Lancashire and Yorkshire Railway.

Eight passengers are reported to have been hurt, but their injuries are believed to be slight.

This junction is about a quarter of a mile to the west of Hindley station. It is protected by the ordinary home and distant signals, which are interlocked with the junction and siding points. There are sidings on both sides of the main-line, and a cross-over-road between the down-line and the up-siding, with slip points on to the up main-line. The signal-cabin is close to the junction points, and there is a good view from it along the line.

On the day in question, a special goods train, which consisted of an engine and tender, one loaded, 56 empty waggons, and a break-van with the guard in charge at the tail of the train, started from Salford station, Manchester, at 8.20 p.m., and arrived at Hindley junction at about 9.45 p.m.

It was stopped at Hindley junction by the signalman, for the purpose of being placed in the siding on the down side of the railway, in order to allow the 8.30 p.m. passenger train from Rochdale to Liverpool to pass.

As soon as the goods train was stopped, the points-man gave a signal to the engine-driver to push it back into the down siding, but there were already 16 or 17 waggons in this siding, and the engine-driver could not succeed in pushing the whole of his train into the siding, which is on an incline of 1 in 97. The guard of the goods train and the junction signalman signalled to the driver four or five times to draw slightly ahead and then set back, for the purpose of trying to get the whole of the train into the siding, in which there was plenty of room, if he could succeed in pushing the 74 waggons up the incline. When the guard of the train found that the whole of the waggons could not be pushed in, he uncoupled the engine and about nine waggons from the rest of the train. Just as he had done this, the engine-driver got off his engine, came to where the guard was standing, and told him to go back and put the break on his van to hold the train, so that he might take that part of the train which he could not put into the siding across on to the up main-line. While the guard was away, the engine-driver uncoupled the engine and six waggons next to it from the rest of the train. He was not aware at

this time that the guard had previously uncoupled the nine front waggons; and the driver then gave his fireman, who was on the engine, a signal to draw ahead, which was done. The engine and nine waggons ran from the siding towards the main-line. The engine-driver did not perceive that the last three of these waggons were uncoupled from the six front ones, and he did not observe that three more waggons ran forward with the engine than he had uncoupled.

When the fireman had drawn the front part of the train on to the main down-line clear of the cross-over-road, he stopped, and in obedience to signals, backed it across on to the up-road. In doing so, he did not observe that he had left three of the waggons at the junction of the siding with the down main-line. The night was dark, and the junction signalman and engine-driver, who were standing close to the junction, were also ignorant that these three waggons had not been taken on to the up-line with the front portion of the train.

The passenger train from Rochdale, which consisted of an engine and tender, four passenger coaches, coupled to a break-van, with Fay's continuous breaks, and the guard in charge in the van at the tail of the train, had been kept waiting at Hindley station for about 12 minutes while the shunting operations were being carried on at the junction; but as soon as the junction signalman believed the line to be clear, he lowered the signal for the passenger train, which then left Hindley station, ran up to the junction at a speed of about 20 miles per hour, and struck the three waggons, one of which appears to have been on the down main-line, and the two others between it and the siding.

The engine-driver, fireman, and guard of the passenger train were not aware of the danger till the engine of their train struck the waggons, one of which was thrown forward into the six-foot in front of the passenger train engine, and the other two on to the down side of the line. The engine of the passenger train, two passenger coaches, and the three waggons, were seriously damaged; the rest of the coaches in the passenger train were slightly damaged, but no part of it left the rails. The engine-driver reversed his engine, the guard of the passenger train applied the breaks the moment that they felt the shock, and the train was brought to a stand about 70 yards from the point of collision. The Company's servants with the passenger train remained at their posts and were not injured.

While the goods train was being shunted, the signalman had told the men in charge that the passenger train was detained at Hindley station, and the goods engine-driver, in his anxiety to get the line clear for the passenger train, sent the guard back to his break-van and undertook what was the guard's duty of uncoupling the front part of the train so as to send it across on to the up line.

The rules of the Lancashire and Yorkshire Railway Company are very plain, that a driver on the main line, shall not leave his engine and this man should not have done so; he should have sent his fireman to see what was the matter, instead of going himself, when he thought that something was wrong.

The real cause of this and many other accidents appears to be the difficulties which the servants of railway companies often have to encounter, when they are placed in charge of trains of such unwieldy length as the special goods train in question, and which, under the circumstances above reported, could not be put into the siding which was intended for the purpose. The men in charge seem all to have been desirous of discharging their duty to the best of their ability. The junction signalman should have ordered the train to be divided and part of it sent across to the up side of the line as soon as he found that the driver could not push it back into the siding, and more particularly so as he was aware that the passenger train was detained in consequence at Hindley station.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

F. H. Rich,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 19th March.

LANCASHIRE AND YORKSHIRE RAILWAY.

Sir, *Dublin, March 5th,* 1877.

In compliance with the instructions contained in the Order of the 14th ult., I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 12th ult., at Accrington station, on the Lancashire and Yorkshire Railway.

A passenger-train ran down the incline, and met the engine which was proceeding towards it for the purpose of being coupled to it, to convey it to Preston.

Ten passengers are reported to have been injured.

Accrington station is situated at the foot of an incline which rises towards Manchester on a gradient of 1 in 40. The passenger lines to and from Preston and the lines to the goods yard join the railway from Manchester to Colne at the south end of the station. All these lines are at the west side of the platform, and there is a dock line for passenger trains at the east side of the platform. The junction signal-cabin is situated at the south end of the station, close to the junction. The signals and points are worked from this cabin, and are interlocked with each other.

On the day in question a train of empty coaches was brought from Preston and put into the dock siding, at the south-east end of the Accrington station. This train was timed to return to Preston at 10.5 a.m.

It consisted of a pilot engine, which had brought the train from Preston, and which was at the dead-end of the dock-line, and four passenger-carriages coupled to a break-van at the tail end of the train with continuous breaks.

When the train was ready to start, the signalman at the junction-cabin took off the signal for the pilot engine to push the train back out of the dock and up the gradient of 1 in 40 towards Manchester. As soon as the train was pushed up the line towards Manchester, sufficiently far to be clear of the cross-over points from the up to the down line, the pilot engine was detached from the train and went back into the dock siding. The guard who was in the rear-van should have put on the breaks to hold the train on the incline until the engine, which was to take the train to Preston, and which was standing on the down line at the station, was put back and attached to the train. The guard in charge had worked for about five years with this train, taking his regular turn of duty, which came once in every four weeks. It was customary for the pilot engine, instead of being in the front of the train, as it was on this occasion, to be generally attached to the back of the train, to pull the train out from the dock siding on to the incline; and as soon as the breaks were applied, or the proper engine had backed on to the front of the train, the pilot engine was detached from it. On other occasions the regular engine was in front. It backed the train out and then went away with it to Preston. It appears that the guard who was in charge (according to his own statement) had never known the pilot engine to be in front, as it was on this occasion. He mistook the pilot engine, which was a Preston engine, and had brought the train from Preston for the regular engine, which was to take the train back to Preston, and he did not contemplate the

engine being detached while the train was on the incline. He occupied himself with sorting his parcels, and attending to a dog which was in his van; and he did not put on the breaks or observe that the passenger-train was running down the incline towards the engine which was backing up to it, until it was too late to prevent the collision. While the passenger-train was running down the incline he heard the signalman and some other persons at the station shouting, and he did get his break on before the collision actually occurred, although not in time to prevent it.

The engine-driver of the engine and tender which was backing up the incline to be attached to the passenger-train did not observe the passenger-train running towards him in sufficient time to prevent the collision, but he reversed his engine and had brought it to a stand before the passenger-carriages struck the tender attached to the engine.

The only damage done to the engine was breaking one buffer casting. No damage was done to any of the carriages, and no part of the train left the rails.

The accident was caused by the mistake of the guard of the passenger-train, who should have been attending to his train instead of sorting his parcels during the dangerous and objectionable shunting operations that are done with this passenger train before it leaves Accrington.

The station is one-sided; the arrangements are very complicated and inconvenient to work, and the place requires alteration and improvement.

I have, &c.

The Secretary,
(Railway Department),
Board of Trade.

F. H. Rich,
Colonel, R.E.

Printed copies of the above report were sent to the Company on the 19th March.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department),
13, *Downing Street,*
29th January 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 22nd instant, the result of my inquiry into the circumstances which attended a collision that occurred on the 17th instant between a passenger train and a goods train, near Plodder Lane station, on the Bolton branch of the London and North-Western Railway.

Two passengers are returned by the Railway Company as having been injured on this occasion, and the driver and fireman of the passenger train are also stated to have been hurt.

Both buffer planks and the spring buffers on the front buffer plate of the passenger train engine, No. 2,238, were broken. The end of the engine frame on the left side, the foot-plate over the coupling rod, and the left side of the tank, were damaged.

The buffer plate of the goods engine, No. 1,590, was broken, and two goods waggons which were knocked off the rails were badly broken, and one carriage next the engine in the passenger train was slighly damaged.

The Bolton branch from Manchester is 12 miles in length, and Plodder Lane station is about 1½ miles south of Bolton. It is situated just north of the down distant-signal worked from Plodder Lane Engine shed sidings, which signal is 712 yards south of the home-signal that covers the junction of these sidings with the main down-line. The signal-box from which these signals are worked is 72 yards north of the down home-signal, and 25 yards north of the point where the siding connecting line fouls the down main line.

This branch line is worked on the absolute block system in the particular manner to which I shall have to draw attention; and this signal-box is one of the absolute block telegraph stations, the next to the south being at Little Hulton. The down distant-signal worked from Plodder Lane Engine shed sidings signal-box, serves also as the down home-signal for Plodder Lane station. This signal is slotted, so that it cannot be taken off without the combined action of the porter at Plodder Lane station, and the signalman at Plodder Lane Engine shed sidings signal-box, but it may be put on at "danger" by the separate action of either of these men.

Plodder Lane station is also provided with a down distant-signal worked from the station.

The block system of working in operation at the time this collision occurred, permitted "line clear" to be given back to Little Hulton from Plodder Lane Engine shed sidings signal-box, for another down train to follow, "immediately the last vehicle has passed the home-signal," except during "foggy weather" or snow storms. And I may remark, that this dangerous mode of working is still followed, by some of the most important railway companies in the kingdom besides the London and North-Western Railway Company.

The evidence of the Company's servants who were concerned in this collision is as follows:—

Henry Carlisle, signalman at Little Hulton block cabin two years next May, states "that the 6.45 a.m. "goods train from Longsight to Bolton passed his "box at 10.20 a.m., and he received 'line clear' from "Plodder Lane junction box for that train at 10.34 "a.m.: that the 10 a.m. passenger train from "Manchester to Bolton was signalled forward to him "from Gibson's siding at 10.31: that he took off the "home signal and starting signal for that train to "pass, and it went by at 10.35, but the driver of "that train had whistled for the signals to be taken "off, and it passed the distant signal at danger; and "the driver slackened speed as he approached his "box: that nothing passed between him and the "driver of that train: that he became aware that a "collision had taken place at 11.9 a.m., as they then "began to work single line (up line) and continued "to do so until 5.44 p.m."

John Bridden, signalman at Plodder Lane Engine shed junction signal-box one year and eight months, states "that he came on duty at 7 a.m., and he "received the signal for 'train on line' for the Long "sight train from Little Hulton block telegraph signal-"box, at 10.20 a.m., and that train reached his box "at 10.27, and stopped between the home and the "distant signals, which were both on at danger "against it, and he signalled it forward towards his "box by green flag, and that train drew up with a "break van at the tail of the train just clear of the "points that lead from the down line into the Engine "shed sidings; and as soon as the tail of the train "had got into that position, he gave 'line clear' back "to Little Hulton at 10.33: that he was engaged "in taking a message on the telegraph instruments "between 10.27 and 10.33, and an engine left the "Engine-shed sidings for Bolton at 10.24: that at "10.34 he received 'train on line' from Little Hulton "for a down passenger train, and he kept all the "down signals on against that train, and the collision "took place at 10.38: that he only heard the driver "of the passenger train whistle for the breaks, and "had not heard him whistle before, he was ten "or a dozen yards ahead of the home signal: that it "was a little foggy, but not much so: but it was "so foggy that he could not see the distant signal, "although he could see the home signal perfectly well:

" that the steam was on on the engine when he first " saw this train coming, and he saw it first when the " engine was between the station and the south end " of the engine shed, and the steam was then on, but " he could not say when the steam was shut off: that " he thinks the passenger train was running at the " rate of 20 miles an hour when it passed the home- " signal, but he could not say at what rate it was " running when the collision took place, as it was " slackening speed very fast, and if it had had 10 " yards more of clearance the collision might " probably have been avoided: that they have been " working according to the old regulations, which " authorised 'line clear' to be given for another " train to come on as soon as the previous train had " passed inside the home-signal, and they have not " worked according to the new regulations until after " this collision had occurred: that his mate Bedson " told him that they were not to work according to " the new regulations until they got instructions to " do so: that the new regulations have been in the " box some few weeks, and the old ones have been " removed, but shortly after the new ones were " brought in, and they were hung up by Bedson " on the night of the accident: that it was not so " foggy as to require him not to send back 'line " clear' until the goods train had got out of the " way: that the train was not an 'express passenger " 'train, as it had to stop at Plodder Lane and all " 'stations:' that the line up to his box is on a falling " gradient of 1 in 137, and beyond it of 1 in 80, " towards Bolton: that the collision occurred about " the middle of the goods train, which was setting " back at the time into the siding."

John Wilson, driver of the 6.45 a.m. goods train from Longsight to Bolton, 3½ years a driver and eight years in the Company's service, states "that he had an " engine and tender, and 18 trucks, and 1 break-van, " and he arrived at the Plodder Lane Engine-shed " siding home-signal at 10.27, and he found all the sig- " nals on at danger against him, and he saw the home- " signal when he was against or opposite to the south " end of the engine shed; there was a regular black fog " at the time, and he could not in consequence see it " sooner: that he stood about one minute or a minute " and a half, and was then called forward by green " flag; the points leading into the siding were then " opened, and he began to put back, the signalman " having previously given him a signal to stop as he " passed the box: that he had got about one half of his " train past the points when he heard the passenger " train engine driver popping the whistle for the " breaks, but he had not previously heard any whistle " for the signal, and he was running about three or " four miles an hour when the collision took place, at " 10.38, and about six or seven loaded trucks were " knocked off the rails, and three were not subse- " quently got on the line, as they were too much " damaged to run: that his train had not stopped " at Plodder Lane station, and he first saw the pas- " senger train when he heard the driver whistle, " when he was about 100 yards from the spot where " the collision took place, and at that time the steam " was off."

Joseph Oldham, driver of the 10 a.m. down pas- senger train from Manchester to Bolton, 13 or 14 years a driver and nearly 20 years altogether in the service of the London and North-Western Railway Company, states "that he came on duty at 5.50 a.m., " and worked the 6.50 a.m. passenger train to Bolton, " and the 8.30 a.m. passenger train from Bolton to " Manchester: that he left Victoria station, Man- " chester, with the 10 a.m. passenger train, with a " tank engine and five carriages, the two end car- " riages having break compartments in them and one " guard, who on this trip was riding in the last " carriage, with two carriages continuously coupled " together with Clark and Webb's breaks: that they " stopped at all stations, and reached Plodder Lane " station by his watch at 10.37: that on approaching " that station he found the home-signal, which is the " distant-signal from the Engine-shed siding, on at " 'danger' against him, and it was not taken off for " him to proceed: that they might have stopped about " half a minute to collect tickets, but the guard gave " him a hand-signal to go on as soon as the tickets had " been collected: that he did not perceive the Plodder " Lane Engine-shed siding stop-signal until he was " about 100 yards from it, as it was very thick " and foggy, and at that time he was running at " between 14 and 15 miles an hour: that the first " thing he did was to open his hydraulic break, " which puts the break on to the driving and trailing " wheels of his engine, and then he gave pop-pop for " the guard to apply his break, and he then reversed " his engine, and put the steam against as well, and " he was running at from five to six miles an hour " when he came into collision with the other train: " that he jumped off before the collision occurred, " and hurt himself, and does not know what damage " was done to his engine. The fireman also jumped, " and was slightly hurt. The collision occurred " about 10.38, as near as he could think, but he did " not look at his watch: that he could not know at " any time whether the Plodder Lane station down " home-signal, which is also the Plodder Lane Engine- " shed siding distant-signal, is on at danger by the " action of the porter at Plodder Lane station, or " Plodder Lane Engine-shed siding signalman: that " the Plodder Lane station down distant-signal was " off when he came in sight of it on this day: and " that he hardly knew what he was doing when he " made out his report that day."

John Hickson, guard of the 10 a.m. passenger train on the 17th instant, three years a guard last May, con- firms the driver's statement about the composition of the train, and states "that they reached Plodder Lane " station at 10.37, and left it at 10.38: that it was " rather thick, but he was not on the look-out, and the " first intimation which he got that anything was " wrong, was hearing three or four sharp whistles for " the breaks, when they were running about 15 or 16 " miles an hour, and when they were 60 or 70 yards " from the home-signal: that he applied the break at " once, and the speed was reduced to about eight " miles an hour, or it might have been a little more, " when the collision took place, about 6.39 a.m., but " he did not look at his watch: that neither the " engine nor any of the vehicles in his train were " knocked off the road: and he thinks the signals " could not be seen at a greater distance than from " 70 to 100 yards."

From the preceding statements it will be seen that the 6.45 a.m. down goods train from Longsight to Bolton, reached the down home-signal at Plodder Lane Engine-shed siding junction at 10.27 p.m., and the signalman on duty (Bridden) having determined to shunt that train out of the way of the 10 a.m. passenger train from Manchester to Bolton, called the goods train past the down home-signal, opened the points leading into the sidings, and signalled the train to shunt, and then at 10.33 a.m. he telegraphed "line clear" back to Little Hulton block telegraph signal-box, and the signalman there received this signal at 10.34 a.m., and immediately telegraphed "train on line" to Plodder Lane Engine-shed sidings signal-box, and the passenger train passed his box at 10.35 a.m., reached Plodder Lane station, where it stopped while tickets were collected, at 10.37 a.m., and left it at 10.38, according to the guard of the train.

There is no down starting-signal at Plodder Lane station, and the signal to proceed was given to the driver, by the guard by hand-signal; and the passenger train (which consisted of a tank engine, fitted with an hydraulic break and five carriages, the two last having Clarke and Webb's continuous breaks on them, worked by the guard who was riding in the last carriage), started, and the driver stated that he did not perceive the Plodder Lane Engine-shed siding stop-signal until he was about 100 yards from it, as it was very thick and foggy at the time, when he was running at 14 or 15 miles an hour; and, notwithstanding the application

of the hydraulic break, reversal of the engine, and whistling for the guard's break, the passenger train engine ran into the centre of the goods train at the fouling point, 47 yards north of the down home or stop-signal. The driver estimated his speed at the time at five or six miles an hour, the guard named eight, and the signalman in the box thought the passenger train was travelling at the rate of 20 miles an hour when it passed the down home-signals, and was slackening speed very fast when the collision took place, at 10.39.

The line is on a falling gradient towards Bolton of 1 in 137 to the junction of the Engine-shed siding with the down main line, for a length of 24 chains, which gradient would lengthen the distance in which a train of this kind could pull up: and there is no doubt that the weather at the time was foggy, as the signalman could not see the down distant-signal at the distance of 784 yards, although he could see the home-signal at 72 yards from his box perfectly well; while the driver of the down goods train which was running in front of the passenger train, and was run into while backing into the siding, saw the down home-signal when he was opposite to the south end of the engine shed, or 269 yards from the down home-signal.

The engine-driver of the passenger train, Joseph Oldham, in a report which he made on the same day after the accident had taken place (which report is herewith enclosed), stated that "during the time I "was stopped at the station, the fact of the distant-"signal being at danger had slipped my memory," &c.

Again, it must be remarked, that it was not so foggy in the opinion of the signalman at Plodder Lane Engine-shed siding signal-box, as to render it necessary for him to block back to Little Hulton, while he was shunting the goods train into the Engine-shed sidings.

As the result of my inquiry I should state, that the collision was caused by the negligence of the engine-driver of the passenger train, in not keeping a better look-out ahead, and in running at too high a rate of speed, considering that he had passed the down distant-signal at danger, before he got alongside of the Plodder Lane station platform.

I think it quite probable that his written report on the day of the accident disclosed the true fact, that he had forgotten that the Engine-shed down distant-signal was on at "danger." And he complained, when before me, that when "home" signals were slotted, and made to serve as distant-signals as well, the drivers did not know in which capacity they stood at danger against them, and that it rendered it necessary to use hand-signals. For this reason, it would be far better to set up a distinct down distant-signal, and to take off the slot on the home-signal.

The driver has been dismissed the Company's service, having been discharged and re-employed on a former occasion.

But the collision must not be set down as a failure of the absolute block system of working, which requires a reasonable interval of space to be kept between following trains, or between a following train and another ahead in the act of shunting on, or foul of the running line.

The London and North-Western Railway Company work their traffic on what is most erroneously called the absolute block system, but which in my opinion involves a most serious departure from it, and which constantly allows collisions to take place.

The true system of absolute block working should strictly interdict "line clear" being given, at any signal-box to the signal-box in the rear for any following train to come on, until the preceding train had gone on, or had been shunted clear off the running line. Instead of that, their regulations direct "line clear" to be given, as soon as the last vehicle of the preceding train has passed the home-signal, although it may not be a yard beyond, except during "foggy weather" or "snow storms." It is left to the signalman to decide what is "foggy weather;" and in this instance he did not consider it foggy weather, and did not "block back" to Little Hulton.

The new regulations, dated 1st November 1876, herewith enclosed, and which were ordered to come into operation the day after this collision took place, would not, even if they had been acted on, have prevented the collision from occurring, as the second part of the fifth paragraph, "When slow passenger, "goods, mineral, cattle, or ballast trains are to be "shunted for express passenger trains to pass, 'line "clear' is not to be given to the section in the rear "until the train has shunted clear of the main line."

Because this was not an express passenger train. It stopped at all stations.

This is a repetition of the Arlesey collision on the Great Northern Railway, fortunately not attended with very serious results, due to this dangerous mode of working the absolute block system.

I have, &c.,
W. Yolland,
Colonel.

The Secretary,
(Railway Department),
Board of Trade.

APPENDIX.

London and North-Western Railway.
Loco. Department,
O'Lane Station,
January 17th, 1877.

Sir,

I was working the 10·0 a.m. passenger train, Manchester to Bolton, this day. On approaching Plodder Lane station I noticed the distant signal from Plodder Lane engine shed at danger. The station is between the distant stop signal from the shed. During the time I was stopped at the station, the fact of the distant signal being at danger had slipped my memory; and the morning being very thick at the time, I did not see the stop signal until I was very close to it, and a goods train was backing into the shed sidings. I applied my hydraulic break at once, and whistled to the guard to apply his, which is a continuous chain break, but he had not time to apply it. I also tried to attract the attention of a porter who was in the van next to me, but instead of applying the break he jumped out of the van; the consequence was, I came in slight collision with the goods causing damage to engine and several waggons.

I am, &c.,
(Signed) Joseph Oldham,
Engineman,
Engine 2,238.

J. Rigg, Esq.

Chief Traffic Manager's Office,
Euston Station, London, N.W.,
February 22nd, 1877.

Dear Sir,

Accident at Plodder Lane.

At the latter end of last month you held an inquiry into the circumstances attending an accident which occurred upon this Company's line at Plodder Lane, Bolton, on the 17th January, and particular attention was called to the fact that the driver implicated had been twice re-engaged in the Company's service after being dismissed for misconduct. Inquiries having since been made, it is found that this was not really the case, and that the mistake has arisen from a similarity of surname and from the man's christian name having been incorrectly entered by the clerk who keeps the staff register. The man in question has only been in the Company's service *once* before.

I thought it well to advise you of this, and perhaps you will be good enough to correct your report accordingly.

Yours, &c.
G. Findlay.

Col. Yolland, R.E.,
Board of Trade.

LONDON AND NORTH-WESTERN RAILWAY.

REVISED GENERAL REGULATIONS FOR TRAIN SIGNALLING BY BLOCK TELEGRAPH.

_____ Signal box. _____ Station.

General Instructions for working the three-wire system.

1. The signalling of trains on the block telegraph system does not in any way dispense with the use of home, distant, starting, hand, or fog signals, whenever and wherever such signals may be requisite to protect obstructions on the railway. The object of the system of electric train signalling is to prevent more than one train or engine being between any two signal stations on the same line at the same time. This is accomplished by not allowing any train or engine to leave a signal station until the previous train or engine has been signalled as having arrived at or left the signal station next in advance.

The block signal instruments and bells are exclusively for the signalling of trains, and must not under any circumstances be used for conversing or for any other purpose than block working, in strict accordance with the Company's regulations; and they must only be used by the signalman or other person specially appointed for the duty.

The signal-boxes at which the block telegraph working is in operation are furnished with instruments to signal for each line of rails, and the system under which these instruments are to be worked, and the mode of indicating the description of approaching trains, are laid down in the following regulations.

2. On those portions of the line worked on the absolute block system, a second train or engine must not be allowed to enter a section until the preceding train or engine has been signalled as having passed out of the section, except under the circumstances specified in Rules 14, 20, and 21, to meet cases of train or telegraph failure. The danger signal must be exhibited at both the home and distant signals, to protect trains or engines standing at stations or intermediate signal-boxes; and when any train or engine has gone forward into the onward section, the starting and advanced starting signals (where such are provided) which control the entrance of trains and engines into such sections must also be put to, and kept at "danger," until telegraphic information has been received from the signal-box in advance that the preceding train or engine has passed out of the section. So long as the starting signals stand at "danger," the home and distant signals must also be kept at "danger," except that after an approaching train has been stopped or its speed reduced so as to admit of its stoppage at the platform, the home signal may be taken off to admit the train, but the starting signal must be kept at "danger" until the line is clear to the next signal station ahead.

3. When the instruments are not in use always keep the handles upright.

The needles and bells must not be worked quickly, but each movement must be made slowly and distinctly.

The signalman on giving signals must see that the needles are firmly and completely blocked over.

The instruments are to be kept perfectly free from dust, dirt, grease, &c.

Lamps or other articles must not be placed in the battery cupboards.

Every signalman is held responsible for keeping his signal box strictly private, and he is not to allow any other person than the authorised officers of the Company to enter or remain in it.

Dial signals.

Passenger train	2 beats of needle to the left.
Goods, cattle, mineral, or ballast trains	3 " "
Light engine	4 " "
Express or fast goods	5 " "

To be acknowledged by repeating.

Bell signals.

To call attention	1 stroke on bell.
†Bank engine (in rear of train)	2 strokes given twice (●● *pause* ●●)
Be ready for fast passenger train approaching	*4 strokes.
Be ready for "express" goods	*4 " given thus —● *pause* ●●●
Be ready for "fast" goods	*4 strokes given thus —●●● *pause* ●
Signal given in error	*5 strokes.
Obstruction signal	*6 "
Imperative obstruction	*6 " given twice.
Shunt train for fast train to pass	*7 "
Stop and examine train	*8 "
Train passed without tail lamp	*9 "
Approaching train separated	*10 "
Opening or closing switch	*11 "
Train running back	*12 "
Train or engine running away forward on right line	*15 " given in groups of three, repeated five times, thus :— ●●●—●●●—●●●—●●●—●●●.
Inspector's signal for testing apparatus	*16 strokes on bell.

The bell signals marked * must be acknowledged by repeating them, and no signal so marked must under any circumstances be considered as understood, until it has been correctly repeated. Should the station to which a signal is sent not reply, the signal must be repeated until duly acknowledged.

† Bank engines: when a train is assisted by a bank engine in the rear, it must be signalled in the usual manner by the codes denoting passenger or goods, &c., trains, in accordance with the several instructions, and immediately after the needle has been blocked over to "train on line" by the station in advance, two strokes sent twice with a pause between, thus ● ● *pause* ● ●, must be given on the bell to the station in advance, which must acknowledge by one stroke. This signal (two strokes twice ● ● *pause* ● ●) will signify that a bank engine is following the train, and "line clear" must not be given until the bank engine arrives and is shunted off the main line, or otherwise properly protected by the signals.

Signalmen are specially instructed to enter in the train register book the fact that a bank engine following a train is signalled to them, in order that no mistakes may arise by trusting to memory.

The process of signalling is as follows:—

4. On the near approach of a train to station A, the signalman must (provided the line is clear) call the attention of station B by ringing his bell (one stroke), and simultaneously moving the needle to and fro. The signalman at B must thereupon hold the needle over to the right (line clear) for a moment to show that he is ready to receive the signal, which must be given in accordance with the dial signals above, *i.e.*, 2 or more beats to the left hand, to denote the description of train. The signalman at B must repeat the beats, and peg the needle to "train on line," and keep it in that position until the train has passed or left his station.

On the near approach of the train to station B, it must be signalled in a similar manner to station C.

As soon as the train has arrived at or left station B, the signalman must call the attention of station A by ringing his bell (one stroke), and, having unpegged the needle from "train on line," point it to the right, signifying "line clear," which A must acknowledge by repeating, and the needle will then be left vertical.

5. Unless special instructions are given to the contrary in the form provided at the foot hereof, the line must be considered clear, and the signal "line clear" be given immediately the last vehicle (with tail lamp attached) has passed the home signal post, except during foggy weather or snow storms, when the signal "line clear" must not be sent to the signal box in rear until the train or engine has passed the home signal and is proceeding on its journey, or has been shunted into a siding clear of the main line.

When slow passenger, goods, mineral, cattle, or ballast trains are to be shunted for express passenger trains to pass, "line clear" is not to be given to the section in the rear until the train has shunted clear of the main line.

6. All signals sent and received must be imme-

diately entered in the train register book provided for that purpose.

The book is always to be kept open and in a convenient position near the instruments.

The entries must be in ink, and no erasures are to be made under any circumstances. If an incorrect entry is made, a line must be drawn lightly through it, and the correction made above or below it, so that the original entry may be clearly seen.

7. In order to give those important stations at which shunting operations affecting the main line are carried on, timely warning of the approach of passenger and fast or express goods trains, the signalman at the post two sections off must, immediately on receipt of a signal indicating the approach of such trains, advise the signalman at the next onward post, by giving him the respective "be ready" signal (4 strokes on the bell), which the signalman must acknowledge by repetition, and immediately pass the same signal forward to the signalman at the shunting station, who must also acknowledge by repeating.

On the receipt of this signal at stations, care must be taken that no engine, truck, carriage, or other vehicle is brought upon, or taken across, the main line or lines, and that no other obstruction occurs, until the train signalled has arrived at or passed through the station; and if on receipt of the signal the main line or lines are being fouled in any way, immediate steps must be taken to clear the road, in order that no delay or slackening by signals may be caused to the express trains. All cases of delay to passenger trains are to be reported to the district traffic inspector and station master.

8. After a train has been put in "block," the needle must not, under any circumstances whatever, be altered until the train has passed the station to which it has been signalled, or the bell signal has been received, intimating that the signal was given in error.

If a train or engine has been signalled incorrectly, the signalman who has made the mistake must give 5 strokes on the bell, signifying "signal given in error," and the signalman receiving this signal must repeat it, and unpeg the needle from "train on line," and allow it to hang vertical. This is to be acknowledged by one stroke on the bell, and the signalman is then to forward the correct signal.

9. In the event of a second train or engine arriving at a signal station before the preceding train or engine has been telegraphed as clear from the station in advance, it must not be allowed to enter the section, excepting only under the circumstances laid down in paragraphs, Nos. 14, 20, and 21.

10. It will not be necessary to "block back" when shunting and marshalling, or transferring vehicles from one line to the other, provided that such operations are performed within the cover of both home and distant signals, unless instructions to the contrary are given in the form at the foot hereof, and except during foggy weather and snowstorms. No obstruction must, however, be allowed outside the home signal until the signalman on duty has "blocked back" to prevent any train leaving the signal station in the rear.

In foggy weather or snow storms the main line or lines must not be fouled until permission has first been obtained by "blocking back" in accordance with the following rule:—

No engine, truck, carriage, or other vehicle is to be brought upon or taken across the main line or lines unless the signalman in charge where such crossing or shunting is required to be performed is satisfied that no train or engine is then approaching on his length, and until the next adjacent signal stations (either up or down, or both lines, as the case may require) have been warned by telegraph in the following manner:—The obstruction signal (six strokes on the bell) must be given. If no train or engine is approaching, the signalman receiving this signal must acknowledge it by repeating back six strokes, having first set his home and distant signals at danger. The signalman at the station where the shunting or crossing is about to take place must then peg the needles to "train on line," for the lines affected, and keep them so till the obstruction is removed. When removed he will call attention by giving one stroke on the bell, and unpeg the needles from "train on line," and point them once to the right, signifying "line clear;" this must be acknowledged, and the needles will then be left vertical. In the event of the signalman receiving the obstruction signal being unable to give the desired permission by reason of the approach of a train, he will, instead of acknowledging the obstruction signal by six strokes, give one stroke only, which will indicate to the other signalman that a train is approaching and about to be signalled; and the crossing or obstruction at the station in advance is not to take place until permission has been subsequently obtained.

11. Should it become necessary to block a section, in consequence of a break-down obstructing the line, or other circumstances taking place rendering it imperative that any approaching train should be stopped, the signalman at the station where the obstruction takes place must give six strokes on the bell twice, with a pause between (• • • • • •— • • • • • •), and peg the needle to "train on line." The signalman receiving this signal must stop any approaching train.

Should there be reason to suppose that both lines are fouled, the signalman must, without any delay, block the lines in both directions.

12. Whenever it is found necessary to advise the station in advance that an approaching train is to be shunted for a following train to pass, the signal of seven strokes on the bell is to be given and acknowledged by an exact repetition.

13. If a signalman observes anything unusual in a train during its passage, such as signals of distress made by a passenger, tail lamp missing or out, goods falling off, a vehicle on fire, a hot axle-box, or other mishap, he must give the station in advance eight strokes on the bell (the signal to "stop and examine train"), and the signalman at the station in advance must acknowledge such signal by repeating it, and instantly put on the danger signals to stop the approaching train.

Where practicable, the signalman must also telegraph the station in advance the cause of sending the "stop and examine train" signal.

The signalman receiving this signal must also stop any train travelling in the opposite direction, and prevent it from entering the section until the other train has arrived, when he may allow it to proceed, having first satisfied himself that the line is clear.

14. Should a train or an engine pass a signal station without a tail lamp on the last vehicle, it will be the duty of the signalman immediately to send to the station in the rear 9 strokes on the bell, and to leave the needle of the instrument pointing to "train on line." The signalman who has received this signal must stop the succeeding train, and warn the driver and guard that something may have become detached from the preceding train, and that there was no tail-signal on the last vehicle, and thereupon the train may be allowed to proceed cautiously to the next signal station.

Upon the second train passing out of that section complete, "line clear" may be given, and the circumstance must be specially reported.

15. In the case of a signalman being aware of the fact of a portion of a train having become accidentally detached, or of a portion of a train running back down an incline, he must immediately place his signals for the opposite line to danger, and stop the next train going in that direction, and instruct the driver to proceed cautiously, as the line may be obstructed. He must also call the attention of the station in the rear towards which the portion of the train may be running by giving 12 strokes on the bell, and leave the needle of his instrument pointing to "train on line." The signalman who has received this signal must stop any train about to proceed on the same line; and he must take such protective measures as

may be necessary, such as turning the runaway train across to the other line or into a siding, as may be most expedient under the circumstances.

16. The "approaching train separated" signal is only to be used in the event of a signalman observing that a train has become divided, and is running in two or more parts. The signalman receiving this signal must stop any train travelling in the opposite direction; and if the "separated train" is running on a falling gradient when the stoppage of the first part would risk a collision by the second part overtaking it, the signalman must not exhibit the danger-signal to stop the first portion, but must give the driver a green signal either by flag or hand-lamp, waving such signal from side to side, and must tell the driver of the circumstances as he passes. If the train is running on a rising gradient or where the line is level, the signalman must stop the first portion and deal with it as expeditiously as possible to prevent the second portion coming into collision with it.

Should any train going in the opposite direction have been stopped, it must be allowed to proceed after satisfactory evidence has been obtained that the line on which it is about to run has not been obstructed.

17. If a train or engine has escaped, without any one on the engine, and is running away forward on the right line, the section in advance must be advised of the fact by giving 15 strokes on the bell in groups of 3 strokes repeated 5 times, a distinct pause to be made between each group of 3, thus:—• • •—• • •—• • •—• • •—• • •. The signalman receiving this signal must arrange for the line on which the vehicles are running to be cleared, and take such other measures as he may consider most expedient under the circumstances, and must also, if necessary, send the signal forward to the post in advance.

18. At signal-boxes open during the day only, switches are provided to enable the stations on either side to be "put through" when the box is closed at night. The signalman on taking duty in the morning is to give notice to the stations he communicates with by 11 strokes on the bell (the opening or closing switch signal), which must be acknowledged by repetition, and he is then to set his needles in accord with the signals exhibited on his instruments.

If a train is in transit at the time the switch is opened, the signalman must not give the "line clear" signal until the train has passed the switch station, or "line clear" has been signalled from the end of the section towards which the train was travelling.

When the time for leaving duty arrives, the signalman must not switch his apparatus out of circuit until the sections on each side are clear. When that is the case, the signal of 11 strokes may be given, and upon receiving the acknowledgment he may close the switch.

The times of opening and closing to be entered in the Train Register Book.

19. The inspector's signal of 16 strokes on the bell, accompanied by the moving of the needle from left to right, is only to be used by that person for testing and examining the instruments, and is to be acknowledged each time by an exact repetition. As soon as the examination of the instruments is completed, one stroke of the bell will be given by the inspector, which is to be acknowledged. This signal to be given only when the section is clear.

20. In the event of any failure in the telegraphic communication preventing the necessary signals being forwarded and received, the signalman in charge of any block section may permit trains or engines to proceed over those sections of the line where the failure exists, provided he first brings the train or engine to a stand at the signal-box, and then advises the driver and guard of the failure. When this has been done, the train or engine may be allowed to proceed cautiously to the next post. No train must be allowed to follow another within five minutes; nor, when a tunnel intervenes in a block section, within 10 minutes, unless the signalman on duty can satisfy himself that the tunnel is clear. So long as the telegraph failure continues, all subsequent trains or engines must be brought to a stand, and the drivers advised how long the previous train is in advance, and the nature of it.

Steps must be immediately taken to have the telegraphic apparatus put into working order again.

When the telegraph is out of order, notice of the fact must be given ts the telegraph department, in accordance with the instructions on this head.

21. To prevent delays to break-down van trains en proceeding to clear the line, they must in all cases be signalled as "passenger trains," the signal "shunt for fast train" being given whenever the sections in advance are occupied by trains which the break-down gang must pass to arrive at the scene of accident. On reaching the section on which the accident has taken place, the signalman in charge is to allow the break-down van train to enter the blocked section, after having first brought the engine to a stand, and having personally warned the driver of the nature and place of the obstruction.

The same course is to be adopted in the case of an engine proceeding to take the place of one that has failed, or of an engine with or without a train, when sent forward to render assistance in cases of failure or accident to preceding trains; the driver being allowed to enter the blocked section, after having been brought to a stand and personally warned of the circumstances.

22. Should any obstruction occur necessitating the working of single line (see Rule Book, pages 32 to 40), the officer in charge giving the necessary instructions for so doing is, at the same time, to give written instructions for suspending the working of the line by block telegraph. On the working of the double line being resumed, the order suspending the working of the line by block telegraph is to be cancelled by a written notice in the same manner and at the same time as the order for working single line is cancelled.

23. In case of accident to trains, or of the line being blocked by vehicles off the rails at or near to block telegraph boxes, the signalman must, in all cases, not only block back to the next adjacent signal-box, as laid down in Rule 11, but also take steps to communicate by telegraph or by messenger to the nearest telegraph station, apprising the station master there of the obstruction, in order that he may take steps to advise drivers of approaching trains of the occurrence, either by stopping them out of course, or by telegraphing to the previous stopping station, in order that the station master there may give them the needful warning.

For instructions regarding the working of signals see Rules Nos. 26 to 51d. and 88 to 102, in the Rule Book dated August 19th, 1876.

GEORGE FINDLAY,
Chief Traffic Manager.

November 1st 1876.

"Line clear" must not be given by the signalman at this signal-box to the under-mentioned signal-box in rear, until the train or engine has passed into the onward section, or has been shunted into a siding clear of the main line.		No shunting operations must be carried on, or any engine, train, or vehicle crossed from one line to the other at this signal-box, until the signalman has first "blocked back," and received permission to do so from the signalmen at the next adjacent signal-box or signal-boxes, either on up or down lines, as named below.	
Up Line.	Down Line.	Up Line.	Down Line.
		Fishpool Box.	Fishpool Box.

Special Instructions for Junction Signal Boxes.

Printed copies of the above report were sent to the Company on the 9th March.

LONDON AND NORTH-WESTERN RAILWAY

Board of Trade,
(Railway Department,)
13, *Downing Street,*
31*st January* 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 24th inst., the result of my inquiry into the circumstances which attended a collision that occurred on the 20th inst., near the Ordsall Lane station of the London and North-western Railway, between a passenger train and a shunting engine.

No passengers are returned as having been injured on this occasion, but the fireman of the passenger train in jumping off the engine was severely injured in the leg, which was subsequently obliged to be amputated.

The engine of the passenger train (a tank) was running with the coal bunker in front, and the chimney behind, and a hole was knocked in the coal bunker, and another in the tank; a buffer was also knocked off the shunting engine. No vehicle was thrown off the rails, and no damage was done to the carriages.

Ordsall Lane is situated about 1½ mile west of the Victoria station, Manchester, on the main line to Liverpool, and a short line branches off from this line to the South Junction and Altrincham line at the eastern side of this station, in a south easterly direction to the Oxford Road and London Road stations.

There are some sidings and a goods yard lying in the fork between the main line to Victoria station and the branch to the London Road station, called the Liverpool Road sidings, and for the purpose of working the traffic, one signal-box (No. 4) is placed at the east end of the Ordsall Lane up-passenger platform, and another (No. 5) in the fork between the two lines.

These two signal-boxes are about 180 yards apart. The traffic out of these sidings, &c. is controlled by two down signals on the same post, close to, but on the west side of the signal-box No. 5, from which they are worked; but these two signals are also slotted from No. 4 signal-box, so that they cannot be taken off without the consent and action of the signalmen in both boxes; and the action for lowering either of these signals in No. 5 signal-box, by shifting a lever, cannot be performed until a pair of facing points are set right for a train to come out of the sidings to cross the up main line, and to join the down main line from the London Road station. The distance from the facing points to the crossing by this line of the up main ine to London Road station is about 34 yards.

The down starting-signal for the branch line to the London Road station, is worked from No. 4 signal-box, and slotted from No. 5; but the facing points of the line leading out of the sidings, across the up line, and which then joins the down line, is not interlocked with the lever that removes the slot from the starting-signal. Passenger trains have only recently been run between Ordsall Lane and London Road stations since 1st April 1875,—two trains only in each direction. I could not learn exactly when these signal-boxes were brought into use, nor whether they had been inspected by an officer of the Board of Trade.

The evidence of the Company's servants concerned in this collision is as follows:—

John Daniels, signalman at No. 4 box 25 or 26 years, states that "he was on duty on Saturday "afternoon, January 20th, and the Bolton train "arrived at Ordsall Lane station about 3.45 p.m.: "that it left at 3.48 p.m. for London Road station "after the departure of the Victoria portion, which "left at 3.46 p.m.; and when the London Road "portion was ready to start, he gave to the signal-"man at No. 5 box five beats, pause, and then five "more beats on the gong, which intimates that a "passenger train for London Road station is ready "to start: that No. 5 signalman, upon receiving this "signal, pulled the slot off his signal, and this "turned up the disc in his signal-box, and showed "'slot off to London Road.' This was in accordance "with the regular mode of signalling, and also with "the working code. Upon the signalman at No. 5 "box pulling off his slot, he (Daniels) pulled off the "signal, and the train proceeded. After the train "had passed his box he heard an engineman pop his "whistle."

Thomas Ireland, signalman at No. 5 box for three years and two months, states "that on the day in ques-"tion the shunting engine was engaged (driver Frede-"rick Grundy) in shunting waggons together for Old-"field Lane sidings. These waggons were shunted on "to the down main line, the sidings in the goods yard "being full: that at about 3.48 he received on the "gong from No. 4 box the signal five beats, pause, "and then five more beats, intimating that a passen-"ger train was approaching, and he immediately took "his slot off: that as the shunting engine was back-"ing some waggons down the crane siding, and "when the driver had gone sufficiently far, he "started in the direction of his box without any "signal from him, and fouled the main line, and the "two engines met on the crossing: that he had not "taken off either of the signals at the side of the "signal-box for it to go out. One is used to go out "of the yard on to the passenger down line, and the "other on to the down goods line. These signals, "moved by levers 41 and 42, are never used for the "mere purposes of shunting, but only when a goods "train is ready to go away.

John Farrell, shunter at Ordsall Lane, working with the Liverpool Road shunting engine, states "that

" they were shunting waggons for Oldfield Lane " siding, and these waggons were deposited on the " down main line: that they had been in Charles " Street siding, to take waggons to the pig siding, " and the waggons on the crane line being foul of the " pig siding, they went in to push them clear: that " while the shunting engine was pushing these wag- " gons clear, Inspector Keeling ordered him to " couple up waggons in the pig siding. While he " was doing so, he left the engine in charge of the " inspector, and during this time the collision " occurred: that he heard it, but could not see " anything."

Inspector Keeling, at Liverpool Road siding, states " that they had been shunting backwards and for- " wards from the sidings across the up line, to get " on to the down main line, for from 30 to 40 " minutes, and the shunting engine and two waggons " came off Charles Street sidings for the pig siding, " but some waggons were standing on the crane line " foul of the pig siding, and they had to go into the " crane siding to push those waggons back, and " having done that, he said to the driver 'Pig' " siding next, and left him and went down to the " pig siding to see if the waggons were coupled " together, and in about a minute or two he heard a " crash: that he ran up then towards the junction, " and he found that a collision had occurred."

Thomas Caldwell, three years a driver, and ten in the service, states " that he was the driver of 298 engine " and of 3.45 passenger train, Ordsall Lane to London " Road station: that the Bolton train arrived at 3.45, " and he stood on the middle road waiting the " departure of the Victoria portion. After the depar- " ture of the Victoria portion he drew up over the " points and hooked on to the carriages forming the " London Road train: that the signals were lowered " before he whistled and before he received a signal " from the guard that the train was ready to start, " and on receipt of this he started away. Just after " getting over the bridge, he saw the shunting engine " standing in the sidings, and shortly after it started, " and he saw that it was running into them: that he " reversed the engine, put steam on against the " engine, but could not stop before coming into " collision with the shunting engine: that he re- " mained on the engine, but his fireman jumped off, " and his leg was so much injured that it has since " been amputated: that he was running at from " eight to ten miles an hour when the collision took " place: that his was a side tank engine, and it was " not knocked off the rails: he had two carriages on,— " the van was not knocked off: he was running with " the bunker first. There was a hole knocked in the " coal box, and another in the tank. There was no " damage done to the carriages. The other engine was " in motion coming towards him. It was not knocked " off the rails."

Frederick Grundy, driver of engine No. 1,534, tender engine, working Liverpool Road shunting engine, states "that they were getting waggons for " the Oldfield Lane sidings ($\frac{3}{4}$ mile from Ordsall " Lane) from the various sidings about Liverpool " Road, and putting them on the down main line; " and the last thing he did before the collision " occurred was to back his engine and two waggons " attached to it into the crane siding so that he " might clear the road leading into the pig siding, " and when he had pushed the waggons standing in " the crane siding clear of the pig siding, the inspec- " tor (Keeling) said 'Go ahead, back into' pig " siding: that he went ahead and fouled the main " line just as the passenger train came up: that he " had on only two waggons: that he received no " signal to stop shunting, and as soon as he saw the " passenger train approaching, he reversed his engine, " and only one corner of the buffer was caught: that " he might have been running three or four miles an " hour when the collision took place: his engine was " not thrown off the road."

This collision was almost the necessary result of performing shunting operations in the immediate vicinity of, as well as on lines now used for passenger traffic, in consequence of the limited amount of accommodation provided at the Liverpool Road goods yard, combined with the omission to provide proper catch sidings, for preventing engines from leaving the sidings, and crossing a passenger line, at the moment when the signal is taken off for a passenger train to pass along the passenger line from the Ordsall Lane station towards London Road station.

If the lever for working the starting signal in No. 5 signal-box for a passenger train to leave Ordsall Lane station for the London Road station had been properly interlocked with the lever that works the facing points of the line leading out of the sidings, this collision could not have occurred; but it is possible that it might have happened still further from No. 5 signal-box from the want of another catch siding.

It is desirable that the Liverpool goods yard should be carefully examined, and proper catch sidings introduced, and the points interlocked with the signals to prevent the repetition of a similar collision.

I have, &c.,

W. Yolland,
Colonel.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th February.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
Railway Department,
17th February 1877.

Sir,

In compliance with the instructions contained in the Order of the 5th instant, I have the honour to report for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 29th ultimo, at the north end of Atherton station, on the London and North-Western Railway.

Two passengers are reported to have been hurt, but their injuries are believed to have been slight.

The railway at Atherton is a single line. It falls from Chequerbent, which is about one mile north of Atherton, on a gradient of 1 in 35, which is eased into a gradient of 1 in 88 before reaching the home-signal post at the north end of the station. From the north home-signal to the south end of the station the line is level.

The station is protected on the north side by a distant-signal, which is well placed and well seen. There is a home-signal about 100 yards to the north of the station platform, where some of the sidings join the main line; this signal is also a good signal.

A public road crosses the railway at the north end of the station platform, and there is a post close to the level-crossing gates, carrying a signal-lamp which shows a white and a red light to show whether the level-crossing is closed or clear. This signal-lamp is worked by the signalman in No. 2 cabin, who has charge of the gates. He also works the home and distant signals towards Chequerbent. No. 1 signal-cabin is at the south end of the station. The points leading to the sidings, and the signals protecting the station at this end, are worked from this cabin.

The arrangements at Atherton station are very old; the siding-points and signals at the north end of the station are not interlocked.

On the day in question, a goods train left Manchester at 5.50 p.m.; it was 40 minutes late, having been delayed by shunting operations and by other trains being in the way. This train consisted of an engine and tender, 21 waggons, and a break-van, when it reached Atherton, about 8.10 p.m. The signalman at No. 1 cabin put a part of this train in the sidings on the south-west side of the station, and the engine was then sent round the remaining portion of the train, and it pushed the eight or nine waggons that remained, into the factory-siding on the north-west side of the station by a cross-over road at the south end which is worked from No. 1 cabin.

Whilst this shunting was being carried on, the signalman in No. 2 cabin received notice of a passenger train which was due to leave Bolton at 8 p.m., and due to arrive at Atherton at 8.22 p.m. As a passenger train from Manchester is due to pass the passenger train from Bolton at Atherton station, the company's rules direct the signalmen not to allow either train to enter the station until they have been brought to a stand outside the home-signals, and accordingly the man at No. 2 cabin kept his distant and home-signals at "danger" against the passenger train from Bolton, which drew gently down the incline, and is reported to have been very nearly pulled up at the home-signal when the pointsman turned the signal-lamp at the level-crossing-gates to show a white light, in order to admit the passenger-train, which ran forward at a speed of five or six miles an hour towards the station.

As the engine of the passenger train reached the factory-siding junction, which is about 60 yards to the north of No. 2 cabin, it ran into the engine and van of the goods train, which had been shunting in the factory-siding.

The points of the cross-over road at the north-end of Atherton station, which lead from the factory-siding on to the passenger line, are exactly opposite to the home-signal at that end of the station. The night was very stormy, and the lamp of this home-signal, as well as the lamp of the break-van of the goods train at the side next to the passenger line, had both been blown out just previous to the passenger train arriving; but the night was very cold and bright, and the semaphore arm at the home-signal was plainly visible at the time. The signalman stated, that he did not lower this home-signal for the passenger train to run into the station, as he usually did, in consequence of there being no light in it at the time, but that he meant to call on the passenger train by showing the white light from the signal-post at the level-crossing gates. The points on the main line, which connect it with the factory-siding, are padlocked by the signalman at No. 2 cabin, who stated that the key was in his cabin at the time; but these are falling points, and do not prevent an engine from coming out of the siding. The points on the siding which lead to the passenger line are worked by an unlocked ground-lever near the points. The guard of the goods train stated that when his engine and break-van were ready to leave the factory-siding, after placing the waggons in it, he called three times to the pointsman in No. 2 cabin to obtain his leave for his engine to leave the siding and run on to the main line. He did not hear the pointsman make any reply, but he saw him go and move the lever that locks the level-crossing gates, and turn on the white light at the gate signal-post, and then walk into the "six-foot" interval between the passenger line and the siding with his hand lamp, and he believed at the time that the pointsman was waving the hand lamp, to notify to him that the goods engine might come out of the siding. The guard therefore turned the points to allow the goods engine and van to run out on to the main line, and gave the engine-driver a signal with his own hand lamp to call him out on to the passenger line.

As the goods engine reached the passenger line, the engine-driver saw the passenger train approaching; it was only about 30 yards distant at the time. The goods engine-driver stopped his engine, reversed, and was moving back towards the siding when the tender of his engine, which was in front, was struck by the engine of the passenger train, and thrown off the rails.

The driver and fireman of the goods engine jumped off before the collision and were not hurt.

The passenger train consisted of a tank-engine and four coaches; the last coach had a break-compartment, with the guard in charge riding in it. None of these men saw the goods engine moving out of the siding, till they were so close upon it that it was impossible to stop the passenger train. They all remained at their posts and were not hurt. The engine and two leading coaches of the passenger train were thrown off the rails and damaged.

The engine-driver of the passenger train, the guard of the goods train, and the signalman at No. 2 cabin, although they appear to have been anxious to expedite the work at the station, and to do their duty, are not free from blame in this case. The signalman should not have brought on the passenger-train without lowering the home-signal, or communicating verbally with the engine-driver of that train, who was not justified in running forward while the home-signal was at danger, unless he had received verbal instructions from the signalman to do so. The guard of the goods train was wrong in calling his engine-driver out of the siding without distinct permission to do so from the signalman at No. 2 cabin.

This accident could not have occurred if the points and signals at Atherton station had been properly interlocked.

I was informed that the London and North-Western Railway Company are at present proceeding with the doubling of their line between Atherton and Pennington stations, and that the Company intends, in connection with this new work, to complete and perfect the station and signal arrangements at Atherton, and on the rest of the new line.

I have, &c.

F. H. Rich,
Colonel, R.E.

The Assistant Secretary,
Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Company on the 9th March.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
March 24th, 1877.

Sir,

In compliance with the instructions contained in your Minute of the 12th inst., I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the collision that occurred on the 5th inst. (not the 4th, as reported by mistake), at Bolton station, on the London and North-Western Railway.

A passenger train ran into a goods train at Fletcher Street junction. No persons were hurt. The engine of the passenger train, and four or five waggons of the goods train were thrown off the road. The coaches and engine of the passenger train were damaged in the sides, and four goods waggons were damaged. Fletcher Street junction is about a quarter of a mile from Bolton passenger station. It is the place where the line to Manchester diverges from the line to Kenyon. The lines from the Bolton goods yard also join the passenger line from Bolton station at Fletcher Street. This junction is protected with the necessary home and distant signals, which are interlocked with the points, and are worked from a raised cabin close to the junction. The railway from Bolton passenger station falls on a gradient of 1 in 100 to Fletcher Street junction, and rises thence towards Manchester and Kenyon on gradients of 1 in 60.

On the day in question, a goods train, which consisted of an engine and tender, eight loaded, 33 empty waggons, and a break-van at the tail of the train, was being got ready to start towards Manchester about 7.15 p.m. The engine and front part of the train had to draw out from the goods yard across the Fletcher Street junction in order to be coupled on to the tail part of the train, which stood in another siding. The whole goods train was made up and started towards Manchester at 7.20 p.m., with the permission of the signalman in Fletcher Street junction. Just at this time the latter received a gong signal from the Bolton station cabin to ask whether the line was clear for the passenger train, which is due to leave Bolton station at 7.20. He replied by giving the "line clear" signal, but kept his home and distant signals at "danger" against the passenger train. The Bolton station signalman, on receiving the notice that the line was clear, lowered the platform signal for the passenger train, which started from the station at the proper time, 7.20 p.m. The driver of the passenger train did not observe the Fletcher Street distant signal, which was at "danger," and which he could see as soon as he was 70 yards outside Bolton station platform, and for about 100 yards before he reached the signal. This distant signal is 200 yards from the home signal, and the driver did not observe the home signal, which was also standing at "danger," till he got close under it and saw the goods train about fifty-five yards in front of him, on and across the line on which he was travelling. He reversed his engine and desired his fireman to put on the engine-break, but he could not stop his train before he ran into the goods train at a speed variously estimated from six to eleven miles an hour. The goods train is reported to have been travelling at about three to six miles an hour at the time of the collision. The passenger engine struck the twenty-third wagon from the tail of the goods train.

The guard of the goods train was standing at the time near the junction, waiting for the van of his train to run up to him, so that he might get into it. The guard of the passenger train was engaged in sorting his parcels, and was not aware of his danger till he was alarmed by the whistling of a goods engine in the yard adjacent. He then ran to his break and put it on, and he was going to look out of the window when he was knocked down by the collision. He was not hurt. He got up at once and went to inquire at the carriages whether any of the passengers were hurt, and found that they were uninjured. The passenger train consisted of a tank engine, which was travelling with its coal bunker in front, a third class with a break compartment, two composites, and another third class carriage with a break compartment and the guard in charge, at the tail of the train.

The accident was caused by the engine-driver of the passenger train failing to observe the Fletcher Street junction signals which were at "danger" against him. This man is reported to bear a very good character. The signalman at Fletcher Street junction is much to blame for having given "line clear" to Bolton station cabin, and thus allowed the passenger train to leave Bolton station whilst the line between his post and the station was occupied with a very long goods train.

The regulations of the London and North-Western Railway Company for working Fletcher Street junction are distinct on this point, that the "line clear" signal shall not be given to Bolton station cabin unless the line is clear at Fletcher Street junction; but the signalman who was on duty when the accident happened on the 5th instant, and one other of the three men employed in this cabin, stated that they were in the habit of giving "line clear" to Bolton station when the line at Fletcher Street junction was occupied. These men gave their evidence in an unsatisfactory manner, and it appears very doubtful to me whether the signalman on duty at Fletcher Street cabin did not plead custom, as an excuse for his neglect upon this occasion, whereas no such custom existed. The regulations strictly forbid such practice.

I have, &c.,
F. H. Rich,
Colonel, R.E.

The Secretary,
(Railway Department),
Board of Trade.

Printed copies of the above report were sent to the Company on the 10th April.

LONDON AND NORTH-WESTERN RAILWAY.

Board of Trade,
(Railway Department,)
16th March 1877.

Sir,

In compliance with the instructions contained in your minute of the 7th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the collision that occurred on the 5th instant, at Stirchley station on the London and North-Western Railway.

Stirchley station is situated on the Coalport branch. The railway is a single line, with a loop for trains to pass each other at Stirchley. The station is protected with the ordinary home and distant signals, which are worked from the south end of the down-line platform. The signals are of the old pattern, but good signals. They are not interlocked with the points. There are two sidings at the north side of the station; one joins the down loop-line and the second, where the accident happened, joins the single line a short distance from the north end of the loop. On the day in question a passenger train, which consisted of a tank-engine, a break van, three passenger carriages, and another break van, with the guard in charge at the tail of the train, arrived at Stirchley from Coalport at its proper time, 12.13 p.m.

The train staff was handed by the guard to the driver of the passenger train, and, with the station-master's sanction, the train proceeded forward towards Wellington. As it reached the facing points about 300 yards north of Stirchley station, the engine and van next to it got off the rails, ran towards the siding, and struck a light engine and some waggons that were in the siding. The passenger engine and break-van and the light engine and one waggon were slightly damaged. The remaining portion of the passenger train remained on the rails of the main line. One passenger is reported to have been slightly shaken. None of the Company's servants were hurt. It appears that about ten minutes before the accident occurred a goods train had arrived at Stirchley from Hadley. One engine was in front, and a second light engine followed the goods train. This latter engine brought the staff to Stirchley station from Oakengates. The goods engine and train were put into the siding on the west side of the line. The checker or check-clerk, who had a key of the padlock by which the facing points leading to the siding were secured, first unlocked the points, opened them for the siding, and held them for the goods train to pass through. He subsequently held them for the light engine to pass. The porter who has charge of these points received the train staff from the engine driver of the light engine, handed it to the checker, and sent him with it to the station. The porter stated that he desired the checker to lock the points; but the checker does not recollect anything of this, and I think the porter forgot to tell him to do so.

Stirchley is a very small station, at which there is a station-master, a goods porter (who attends to the passenger trains, has charge of the points, and attends to other work of the station), and a checker, who looks after the traffic and the waggons to and from the adjacent works. Both these latter are young hands, the porter having only been employed about five months in the Company's service, and for the last five weeks at his present duties. The station-master in charge should have satisfied himself that the facing points through which he had seen the goods train shunted were properly secured before starting the passenger train. These points, which are loaded to stand right for the main line, do not appear to have returned to their proper position after the passage of the light engine through them, and the checker who held them for the light engine to pass, did not observe whether they returned to their proper position or not. They must have remained partly open for the siding, in consequence of the bolt by which they are locked having got jammed between the points and the stock rail, or in consequence of the sand and grease on the chairs having made them stick.

I recommend that the signals and points at Stirchley station should be interlocked; that the home signals should be separated and placed at each end of the loop-line; that all facing points, except those at the ends of the loop, should be taken out; and that the station-master, who is held responsible for the proper regulation of the station, should be required to attend more strictly, and see that all persons employed at the station pay attention to the duties they are directed to perform.

The present accident was caused by the yard porter having deputed the checker to do his duties, instead of attending to them himself, and by the station-master having neglected to satisfy himself that the line was in a proper state before he started the passenger train.

I have, &c.,
F. H. Rich,
Col., R.E.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 10th April.

LONDON AND SOUTH-WESTERN RAILWAY.

Board of Trade,
(*Railway Department,*)
13, *Downing Street,* 16 *February* 1877.

Sir,

In compliance with the instructions contained in the Order of the 12th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 7th instant, near the Waterloo station, on the London and South-Western Railway.

In this case, the 9.30 p.m. passenger-train from Hampton-Court was approaching the Waterloo station, when it came into collision with a shunting-engine on the up-main-line, outside of the "A" signal-cabin on the south of the station.

Two passengers complained of injury. No servants of the Company were injured.

None of the vehicles were thrown off the rails, and very little damage was done to any of them.

Description.

The "A" signal-cabin is constructed on a bridge, about 200 yards on the south of the Waterloo station-platforms. In this signal-cabin there are two signalmen daily to about 10 p.m., and then one signalman for the remainder of the night. The points and signals are worked from this cabin, and the levers for working them are interlocked with one another. There are four lines on the south of the signal-cabin, viz., the up and down main-lines, and the up and down Windsor lines, and these four lines diverge into 12 lines in the station.

The line to which it is necessary particularly to refer with reference to this collision is the up-main-line, which is the second from the eastward and the third from the westward, and the collision occurred about 50 yards on the south of the cabin.

The Hampton-Court train in question consisted of an engine and tender, six carriages, and a break-van. It left Hampton-Court punctually at 9.30 p.m., and was approaching the Waterloo station at 10.9, also punctually, when the collision occurred.

Evidence.

The engine-driver of this train, *Thomas Basford*, states that he was running in due course in approaching the signal-cabin on the south of Waterloo station, with the signals duly lowered for his train, when he saw an engine about 30 yards in front of him, standing on the main-line. He was then travelling at a speed of four or five miles an hour. He reversed his engine; his fireman applied the tender-break, and opened the sand-box; and he whistled for the guard's break. He was, however, unable to bring his train to a stand before he struck the shunting-engine, at a speed of about three miles an hour. He did not recognize, when he first saw the engine, that it was on his line of rails.

The fireman, *Edwin Saw*, confirms the evidence of his engine-driver. He first saw the shunting-engine ahead, and remarked to the engine-driver, "Mate, that engine is on our road." He then put his break on as sharply as he could, whilst his mate reversed the engine.

The guard, *William Turner*, was riding in the break-van next behind a third-class carriage, which was next to the tender. He heard the break-whistle, after having seen that the signals were lowered for the train. He was in the act of applying his break when the collision occurred. He had not seen anything of the engine, and did not know the cause of the obstruction for which the break-whistle was sounded.

The driver of the shunting-engine with which the Hampton-Court train came into collision, *William Pearson*, states that he had been standing on No. 4 road in the station, at the place where he usually stands when not occupied in shunting, when the Portsmouth train arrived in No. 7 road. He was told by the shunter to go into No. 7, to pull out the Portsmouth train, and the signals were lowered from the signal-cabin in due course. His engine was coupled on the rear end of the Portsmouth train ; he pulled it out from No. 7 road ; he put portions of the train into three different roads, and, after knocking back the third set of carriages into No. 5 road, he stood with his engine on the up-main-line, waiting for the signal to be lowered for him to return to No. 4 road. He had been about a minute in that position when he saw the Hampton-Court train approaching. The engine of that train was 40 yards from him when he first saw it. Before he saw the train coming he had seen the signal lowered for it. He saw by the signal being lowered that the signalman had made a mistake. He had moved his engine back about 40 yards before the engine of the Hampton-Court train caught him. Generally, when he is shunting carriages, he is let in as soon as the last set of carriages are clear, and sent into No. 4 road. It was an exceptional circumstance for him to be left out on the south of the cabin where he had done shunting his carriages.

The signalman who was on duty at the "A" signal-cabin on the south of the Waterloo station, *Robert Stevens*, states that he came on duty at 10 p.m., which was his regular time, and it was his duty to remain there until 6 a.m., with a telegraph-boy to assist him in the performance of his duties during the night. After he came on duty he let the shunting-engine out of No. 7 road with the Portsmouth train attached to it, and then the yard foreman, Varrow, said to him, "Bob, stop the engine, to put some more coaches on No. 5, to go to the junction." He, therefore, stopped the Portsmouth engine down in No. 7 road. Whilst the Portsmouth train remained on the bridge, he put the Reading engine down No. 5 road, and then crossed the Reading engine over, and put it down No. 2 road. He then went on with the shunting of the Portsmouth train. The first part of that train was put down No. 3 road, the second part down No. 4 road, and the third and remaining part down No. 5 road. The Reading engine on No. 2 road then whistled to go to Nine-Elms, and he allowed that engine to go, and he pulled the signal off to let the Portsmouth engine out of No. 7 road to go down No. 5 road, and to start for the junction with the empty carriages. As he was doing so he received warning for the Hampton-Court train from the "B" signal-cabin ; he gave "line-clear" for the approach of that train, and lowered his signals, forgetting that he had left the shunting-engine standing on the up-main-line, in the way of that Hampton-Court train.

The yard-foreman on duty, *James Varrow*, states that the evidence given by the signalman is perfectly correct. He told Stevens that the Portsmouth engine would have to remain in No. 7 road whilst the Portsmouth carriages were being shunted back into different roads, and he saw the Portsmouth engine come out of No. 7 and drop down into No. 5, after the shunting-engine had disposed of the Portsmouth carriages. He was between the end of the platform and the "A" cabin when the collision occurred. He did not see the signals lowered for the Hampton-Court train to come in.

Conclusion.

This collision has evidently occurred as the result of a mistake on the part of the signalman on duty in the "A" cabin, which is the principal cabin on the south of the Waterloo station. This signalman fully admits his mistake. He forgot that the shunting-engine was standing on the south of his cabin, although it appears to have been properly provided with a head-lamp and tail-lights ; and he lowered the signals for the Hampton-Court train to come into collision with that engine. The engine-driver could not do otherwise than wait on the south of the cabin to receive a signal to admit him again into the station to No. 4 road, and he cannot be blamed for the collision. The Hampton-Court train was properly approaching the station, and the engine-driver of that train was not to blame, as the signals were lowered for him to run into the station. The excuse made by the signalman for his forgetfulness is, that having left the shunting-engine for about a minute on the main-line, and having been engaged in shunting another engine at the station, he was thrown off his guard by receiving the warning-signal for the approach of the Hampton-Court train ; and he then lowered his signals for that train, forgetting that the shunting engine was standing on the south of his cabin on the up-main-line. It is thus clear that his mistake was due to his having commenced a second before completing a former shunting operation ; that is to say, that he shunted the Portsmouth engine at the station whilst he left the shunting-engine out on the up-main-line. It is desirable, with a view to the avoidance of such a mistake for the future, that he should be instructed in all cases to complete one operation before he commences a second. When, for instance, the shunting-engine is employed for shunting carriages from one line to another, it should be disposed of, got out of the way, and turned into the road in which it is intended to stand, before any other shunting operation is commenced. The signalman would then not be placed in the position of being liable to forget, in darkness or in daylight, a shunting-engine left standing on the main-line. This precaution is the more necessary, inasmuch as in working his signal-levers and his telegraph-instruments the signalman faces the station, and, therefore, has his back to the lines on the south of his cabin, and is unable to see whether they are occupied when he lowers his signals or gives "line-clear" for trains approaching the station.

I have, &c.,

H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 6th March.

LONDON CHATHAM AND DOVER RAILWAY.

Board of Trade,
(Railway Department,)

SIR, 13, *Downing Street*, 31*st January* 1877.

IN compliance with the instructions contained in the Order of the 26th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 25th instant, at a point between the Peckham-Rye and Denmark-Hill stations, on a portion of the London-Brighton-and-South-Coast Railway, allocated by Act of Parliament to the use of the London-Chatham-and-Dover Railway Company.

In this case, six waggons and two break-vans from the 4.57 a.m. Great-Northern coal-train, from King's-Cross for the Crystal-Palace, escaped from the Nunhead station, and, after running back through the Peckham-Rye station, came into collision with the 5.30 a.m. goods-train of the London-Chatham-and-Dover Railway Company from Stewart's-Lane for the Crystal-Palace.

The two break-vans of the Great-Northern Company were entirely destroyed, and a waggon in front of them, belonging to a private owner, laden with coal, was almost destroyed.

The engine of the goods-train mounted the débris of the break-vans and waggon, and was thus thrown off the rails, so as to block both lines, and much damaged. Three of the waggons behind it were also thrown off the rails, and were more or less damaged.

The engine-driver of the goods-train was thrown off the engine and injured; but the fireman was only slightly hurt, and no other servant of the Company was injured.

Description.

At the Nunhead station, from whence these waggons escaped, there are, as will be seen on the accompanying diagram, three lines of rails; and on the east of the station there is a junction between the Blackheath line and the Crystal-Palace line. On the north of the main lines at the station there is a siding, YZ, connected on the east of the Blackheath junction by a through-crossing and slip-points with the Blackheath lines.

The signal-cabin is on the east of the station-platforms, and the line from which the waggons escaped is on the north of the station-platforms, and is used for all trains proceeding from London, either to the Crystal-Palace or in the direction of Blackheath.

The Nunhead station is about a mile to the east of Peckham-Rye, and about a mile and three-quarters on the east of the Denmark-Hill station.

The lines of rails at the Nunhead station are on a gradient of 1 in 136·36, falling towards Peckham-Rye.

On the west of the Nunhead passenger-platforms there is a blind-siding, RS, connected at M, with the line from which the waggons ran back, and at N, with the up-main-line used for up-Blackheath trains.

The goods-train with which the waggons in running back thus came into collision consisted of an engine and tender, 16 trucks, and two break-vans, and left Stewart's-Lane punctually at 5.30 a.m.

Evidence.

The engine-driver of that train, *George Hughes*, states: He passed through Denmark-Hill, without stopping, about 5.42 a.m. It was pitch dark at the time. He was travelling at a speed of from about 25 to 30 miles an hour, and he found the distant-signal, working from Peckham-Rye station, against him. He prepared to pull up his train, and whilst he was doing so he saw three red lights ahead of him. As soon as he saw they were coming back he reversed his engine and applied his steam, and by the time he had done so the trucks came into collision with his engine. He was thrown off the engine into the ditch at the foot of the slope of the cutting. He thinks his speed was about 12 miles an hour when his engine struck the waggons.

The fireman, *Richard Tookey*, confirms the evidence of his engine-driver. He had only been twice previously on the line, and asked what the three red lights meant, and, receiving no reply from his mate, he began to apply his break. He guessed something was wrong on seeing his mate reverse the engine. Immediately afterwards he felt the shock of the collision, which threw him back into the tender. He was shaken, but was able to begin work again yesterday.

The head-guard, *Thomas Smith*, was riding in a break-van, the last vehicle but one in the train. He saw, just before the train reached the Peckham-Rye distant-signal, that it was at "danger." He turned round to apply his break and was suddenly knocked down by the shock of the collision, but he was not hurt.

The under-guard, *Ezra Jakuest*, was riding in the break-van at the tail of the train. After seeing the Peckham-Rye signal at "danger," and whilst applying his break, he was knocked down in the van.

The Great-Northern train in question consisted of a tank-engine and six waggons loaded with coal, and two break-vans. It left King's-Cross goods-station at 4.50 punctually.

The engine-driver, *James Carter*, states that he arrived at Nunhead about 5.25, and drew up on the passenger-line north of the station, applying to Crystal Palace and Blackheath down-trains. He brought his engine to a stand short of the starting-signal at the station, and clear of the junction-points between the Crystal-Palace and Blackheath lines. The shunter called to him that he had an empty waggon to be taken on. The head-guard, George Dorrington, came forward and uncoupled the engine, and said, "Go ahead into the siding." He went into the siding, found that the empty waggon to be taken on stood behind five or six loaded ones, drew them all out together, knocked the empty one out on the main line, and put the loaded ones back in the siding again. When he set back to the empty truck on the main line, the under-guard called to him that the train which they had left on the main line had run away. The signal-man called to him and told him he had better cross over and go to Peckham-Rye as soon as possible. He did so, and as soon as he got there he found that the head-guard was already there, having run down the line. He asked the head-guard where the train was, and was told it was "down there," meaning somewhere near the distant-signal west of Peckham-Rye, and that it had pitched into a goods-train. Before the engine was uncoupled from the train, he and his fireman asked the head-guard if he had got his breaks on and the head-guard replied "Yes."

The fireman, *Henry Gunter*, states that when the guards came forward to the engine, he and his driver both asked them if they had got their breaks on, and the under-guard, who stood close to him, said he had got his break on, but he did not hear what the head-guard said. In other respects the evidence of the engine-driver is quite correct.

The under-guard, *James Burgess*, was riding in the break-van at the tail of the train. They came to a stand at the platform, and stood there for about two minutes. He heard some one call out in giving an order to the engine-driver, but did not hear what was said. He saw the head-guard get out of his break-van, and at once put his break on, and followed the head-guard up to the engine. He did not know whether the head-guard had put his break on or not. The head-guard turned round to him and said there was "one to go on," meaning there was an empty truck to go forward. He saw the head-guard unhook the engine, and stood on the step of the engine whilst he did so. The head-guard went into the siding to look for the empty waggon amongst the trucks. He rode on the engine-step to see the engine over the points, and to give the signalman a light to pull the points over. He came back to the waggons in the siding, and then heard the head-guard say "Where's the train?" "It's gone away!" They both started after it, and after he had gone about 100 yards with the head-guard, he ran back and fetched the engine to go down the other line, and try to overtake the waggons. He went back to the engine, told the signalman that the train had run away, crossed the engine on to the down road, and he rode in the empty waggon whilst the engine-driver pushed it back to Peckham-Rye, where he found the head-guard standing against the signal-box. He cannot account for his waggons and vans running back as they did, unless by supposing that the engine had started them when the driver eased back for the coupling to be undone. He has been for 17 months, one week out of 10, running this train. He knew it was an incline, and that the waggons would run back if he did not put his break on. He cannot say how it was that the train ran back with his break on, he is only certain that he did put it on. The empty waggon was about to be taken to the Crystal-Palace, in order to get it back to King's-Cross, in accordance with the common practice at Nunhead station, because the siding being on the down side only it was inconvenient to attach it to an up train. It is therefore usual to attach it in the first instance to a down train, to take it to the Crystal-Palace, and to bring it back from the Crystal-Palace for King's-Cross. He had only used his break once before on the journey, viz., between York-Road and King's-Cross, Metropolitan. It was in good order, but the wheels did not "skid" on account of the greasy state of the rails and the wet state of the wheels and blocks. It was a 10-ton break as well as that of his head-guard. None of the signals were against him from King's-Cross to Nunhead. It was a very wet greasy morning. He asked his mate after the accident whether he had applied his break, in the van last but one in the train, and his mate replied that he had not applied that break. After the waggons had gone away his mate asked him if he had applied his break and he replied that he had done so. All the six waggons of the train were loaded with coal. In knocking the empty waggon from the siding back on the main line it was not sent to a point nearer than 50 or 60 yards to the goods waggons left standing on the main line.

The head-guard of this train has been dismissed from the service of the Great-Northern Company, and did not attend this inquiry, but Mr. Cockshott, the superintendent of the Great-Northern Railway, has been good enough to furnish me with the enclosed copy of the evidence he took from this man on the 25th January.

George Dorrington, goods guard, states: "This "morning I was guard of No. 13 up Great-Northern "coal-train (Crystal-Palace). I had on six coal-wag- "gons (loaded) for Crystal-Palace, and two 10-ton "breaks behind. My breaksman was James Burgess. "We ran all right till our arrival at Nunhead junction, "where I had to take on one empty waggon, there "being no cross-over-road by which I could take it "up as I returned. The empty was for King's "Cross. There being no cross-over-road it had to be "taken on to Crystal-Palace and brought back. The "driver pulled up at the Nunhead-platform. I un- "hooked the engine myself, and told the driver to go "ahead, over the points leading to the siding from "the down-road. He did so, and I walked down the "siding to look for the truck. The signalman worked "the points from the box. The driver had about "100 yards to go, and he may have been three or "four minutes. I had heard the shunter in the yard "call out to the driver that there was one waggon to "go on. This was before I had unhooked. As the "driver was coming back into the siding I went into "the yard to look round for the shunter. I didn't "see him, and turning round towards my train found "that it had gone. I ran back up the line. It was "quite dark at the time, and raining fast. I couldn't "see the trucks. I still ran back up the line, and "when I got to Peckham-Rye station, a London- "Chatham-and-Dover guard told me that my train "had met his, half-way between Peckham-Rye and "Denmark-Hill stations. I went further on, and "found my two break-vans and train. I found one "of them lying partly under the London-Chatham- "and-Dover engine and partly on the bank, the other "one was on top of one of Cockerell's waggons, "which was the last on my train. Two of the Lon- "don-Chatham-and-Dover coal-waggons were off the "road, and one more of Cockerell's, besides the one "which was under the break. I know there is a "sharp rising gradient from Denmark-Hill to near "Peckham-Rye, and then on to Nunhead, in fact up "to the Palace. When we pulled up at Nunhead *I* "*did not put my break on, but told Burgess to put* "*his on.* His was the last break, and I thought that "would hold the waggons. I did not take any "further precaution as regards spragging, &c., nor "did I satisfy myself by looking that the one break "would hold the waggons well. I admit that both "breaks have always been used before. I cannot say "why I did not put mine on, on this occasion. I "had two sprags in my break, there were also two in "the other break. Joined Great-Northern service "October 1874. Made breaksman January 1875. "Made guard November 1876. Worked London "suburban goods trains since January 1875. I was "six years and two months on Great-Eastern Railway. "Porter one year and ten months, shunter three years, "goods guard remainder of time. Left Great-Eastern "to go to a contractor's steam roller. Didn't like it, "and resigned and came to Great-Northern Railway. "I know it is a steep incline at Nunhead. The prac- "tice is to put on both breaks before uncoupling "engine. We have never found it necessary to use "sprags. Never had a runaway before. I cannot "give any reason for neglecting this time to put on "my break."

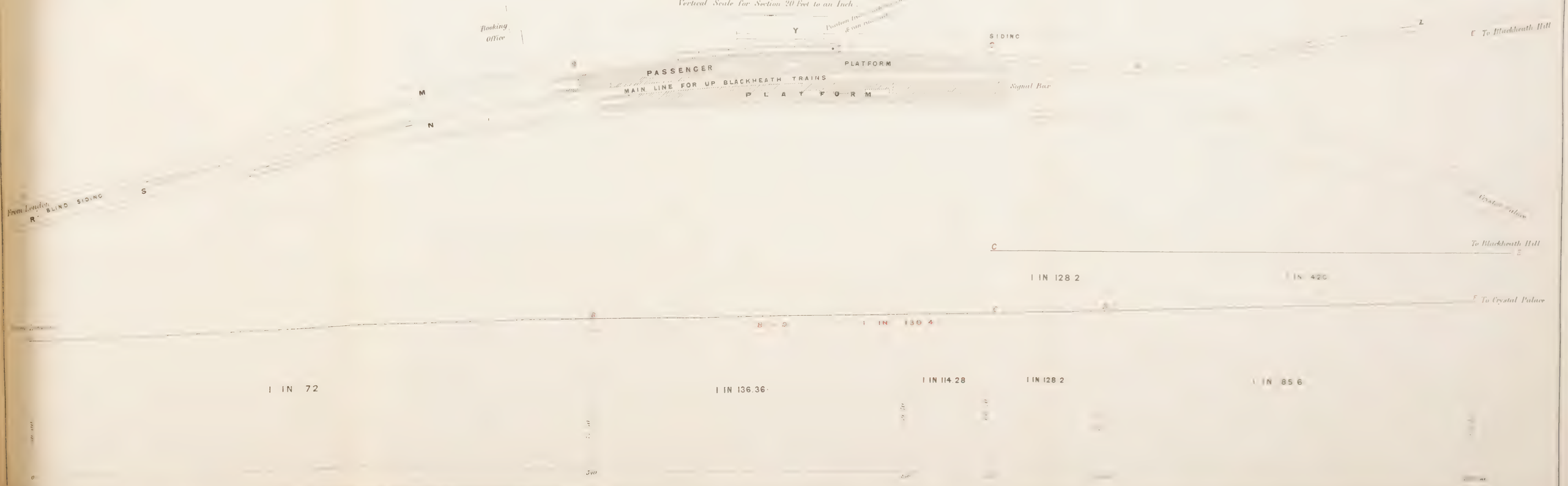
The signalman on duty at the Nunhead signal-cabin, *John Barnes*, saw the coal-train arrive about 5.27 on the morning in question. The shunter came to him and said there was an empty waggon to go forward with it. He asked where it was in the siding, and was told about eight or nine waggons down the siding; he replied, "They have plenty of time, they "can take it way. They will only have to make one "shunt." He set the road, opened the signal-box door, and shouted to the driver "Right for siding." It was very dark. The engine went in the siding, the shunter made signals to him by hand-lamp, and he saw the engine go back against the waggons in the siding. The driver brought out about eight or nine trucks, left the empty truck on the main-line, and just as he was pushing the full trucks back again into the siding, the signalman at Peckham-Rye rattled up and said part of the goods train had broken away. That was at 5.40 a.m., but he has no memorandum of it. The engine was uncoupled from the train at 5.31 or 5.32. It was 5.40 when he received the informa- tion from Peckham-Rye of the break away. Whilst

To accompany Capt.n Tyler's Report of the 31st June 1877

L.C & D.Ry

NUNHEAD STATION.

Horizontal Scale for Plan and Section 50 Feet to an Inch
Vertical Scale for Section 20 Feet to an Inch.



the message was passing on the instrument, one of the guards said "Officer! let's have our engine, our train's run away." The engine-driver then put the loaded trucks back into the siding, came out to the main-line, and set back to the empty truck, which was then standing about 30 yards east of the station-signal, perhaps 60 yards from the position in which stood the waggons on the main line before they ran away. He heard the guard asking some one before the engine was uncoupled if the breaks were on, and some one shouted out "Yes." That was before the engine left the coal-waggons on the main-line. He could not see the position of the goods-train in consequence of the covered-way of the station, and was not in the least aware that it had run back until he was advised from Peckham by telegraph of its having done so. He believes 12 minutes elapsed between the time when the coal-train arrived at the station and the time he received a telegram from Peckham-Rye that the train had run back.

The signalman on duty at Peckham-Rye station, *Robert Packenham*, saw the coal-train pass at 5.22, on its way to Nunhead, and at 5.41 he received notice from Denmark-Hill of the approach of the Chatham-and-Dover goods-train. On looking out of the window of his cabin, just as he had received the above notice, he saw the waggons and vans of the Great Northern coal train running back to his cabin. He therefore blocked the road to Denmark-Hill, and told that station to stop "A.X.," meaning the Chatham-and-Dover goods-train. The Denmark-Hill signalman replied "It has passed me." He then telegraphed to Nunhead, to ask if the signalman there knew that the train had run back, and the signalman at Nunhead replied "Yes, where is it?" He then left his cabin and reported to the station-master what had occurred. The entry in his book as regards the message is—

"21. 1.77 from M.R. to N.E. 5.41a, do you know part of C.X. has run back?—Answer.—Where is it?
"(Signed) R. Packenham."

He is not sure whether the answer was "Yes, where is it?" or "Where is it?" He received no notice of the goods waggons running back, and the first he knew of it was when he saw it approaching his cabin, and within about five yards of it. He had not time then to move his points.

George Drewery, foreman-platelayer at Nunhead, states, he was working about 300 yards on the west of the Nunhead station. He saw the Great-Northern goods-train go to the station, and after it had been gone a few minutes he was disturbed in his work by finding it run back on the down-line. He looked and saw there were no breaks on, and no one in the vans. There were two break-vans, and he does not know how many trucks, but he is quite sure the breaks were not on, because if they had been he would have seen fire flying from the wheels. He thinks they passed him at a speed of five or six miles an hour. It was too fast for him to venture to attempt to stop them in the dark. He saw the wheels of the vans were in motion when they passed him. It was very dark, but being so close he could see that all the wheels of the vans were in motion.

William Beckwith, a platelayer in the employment of the Chatham-and-Dover-Company, was working with George Drewery, the previous witness, about 300 yards on the west of the Nunhead station. He was busy at his work, and did not see the runaway trucks until they were alongside of him. He saw that they were going back too fast to attempt to stop them. He could not see in the dark whether the breaks were on or not, and could not see anyone in the vans, and it was too dark where they were to see whether the wheels were turning round or not. If the wheels had been skidding the waggons would not have run back at that pace, and he did not see any fire flying from the wheels.

Conclusion.

This collision was of a serious character, and was attended with much destruction to the vehicles engaged in it. It was most fortunate that the runaway waggons and vans were met by a goods-train, and not by a passenger-train.

The immediate cause of the collision was evidently the neglect of the guards of the Great-Northern Company to apply sufficient break-power, by means of the two vans with which they were provided, behind the coal-train to prevent the six waggons and two vans from running back on falling gradients of first 1 in 136, and afterwards 1 in 72, after the engine had been detached from the waggons; and the head-guard has been dismissed from the service of the Company for this neglect.

Having regard to the nature of the present accident, and to the further consequences which might result in the event, either of the vehicles of a passenger-train running back and meeting with another train after having attained a high speed, or of the vehicles of a goods-train running back and meeting with a passenger-train approaching at speed from the opposite direction, it is evidently desirable to provide against the risk of any vehicles so running back in future from the Nunhead station. It will not be difficult to guard any such a contingency. There are, as will be seen in the diagram, a pair of points, already referred to, connected with a "blind-siding" on the west or low side of this station; and it is only necessary that they should be properly utilized by keeping them set in the proper direction (when they are in use for the passage of trains), for the purpose of catching any vehicles which may, from the neglect of the servants or from any other cause, run back along the main line from that station.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the London, Chatham, and Dover, and the Great Northern Railway Companies on the 6th March.

LONDON, CHATHAM, AND DOVER RAILWAY.

Board of Trade,
(Railway Department,)
SIR, 13, *Downing Street, 3rd April* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 8th ultimo, the result of my inquiry into the circumstances connected with the accident which occurred to a Great Northern goods train, on the 1st ultimo, close to the Blackfriars goods station of the London, Chatham, and Dover Railway.

No persons were hurt, and but slight damage was done to the permanent way or rolling stock.

There are four lines of railway through Blackfriars station, two for the main, and two for the local lines; and these lines are numbered from 1 to 4; Nos. 1 and 2 constitute the up and down Metropolitan local lines, and 3 and 4 the up and down main lines. There are sidings and a goods yard lying on the eastern side of the main lines, adjacent to No. 4 down main line, and connected with it by trailing points; and about 300 yards south of the station there is a through crossing road from No. 4 to No. 1 line with trailing points on these two lines.

The trailing points on No. 4 down main line of this through crossing road are worked by rods from the Blackfriars station south signal-box, from which they are distant about 120 yards. These points are about 12 feet in length, and they are connected together by two rods, 3 feet 3½ inches apart, and the rod next the tongues of the points, technically called the force rod, is also connected with the rod from the signal-box, by which these points are opened or shut, for the through crossing road.

About 4.15 p.m. on the day in question, a Great Northern goods train engine, with 10 trucks attached, had backed out of the Blackfriars station sidings adjacent to No. 4 down main line, and stood on that line with the engine south of the points of the through crossing road, for the purpose of passing along it to No. 1 up local line, and thence to King's Cross station; and as it commenced to move along the through crossing road from No. 4 to No. 1 line, the engine at once got off the rails and ran about 32 yards before it was stopped.

Both main lines of railway were blocked by the engine being off the rails.

The evidence in this case is as follows:—

1. *John Marchant*, platelayer on the London, Chatham, and Dover Railway, states: "That he was standing six or seven yards north of the Great Northern engine before it started to pass from No. 4 road to No. 1 road by the through crossing: that he saw that the points of the through crossing were rightly set for the train to pass from No. 4 road to No. 1 road when the leading wheels of the engine passed over the points: that he thinks they were quite closed and did not stand partly open: that he saw the first connecting rod, the force rod, break when the leading wheel of the engine was right over it, and when it broke it went off something like the explosion of a fog signal: that he did not notice where the trailing wheels of the engine passed: that he did not see any mark on the tip of the points: that he did not see that the engine immediately got off the rails, but the engine did get off the rails somewhere, though he could not say where, as he had to get out of the way himself: that he does not know how many of the wheels were off; neither could he say whether the truck next the engine was on or off the rails; and he does not know what time it was when this occurred, it was somewhere about 4 o'clock. He did not see anything attached to the engine hanging down, which could have broken the connecting rod."

2. *John Low*, ganger of the platelayers, states: "That he got to the spot in about 20 minutes after the accident had occurred: that he found the first connecting or force rod broken, and that the tip of the tongue of the right point rail had been freshly marked,—that something had struck it: that he examined the connecting rod where it was broken, and could not find any trace of any blow to fracture it: that the mark on the left-hand point rail was an old mark: that he found the engine with all its wheels off the rails, and the leading wheels of the truck next to it were also off the rails, but the trailing wheels of that truck were on the rails of No. 4 road: that there was one chair and two studs broken at the slip road near where the engine stopped: that nothing had been recently done to that pair of points: that the fracture of the connecting rod was a clean fracture, and exhibited no flaw in it."

3. *George Hall*, signalman in the Blackfriars south box, states: "That he was on duty on the 1st March, and about 4.15 p.m. a Great Northern goods train wanted to leave the Blackfriars sidings for King's Cross: that the driver gave the usual signals to come out of the sidings on to No. 4 road, and when the train had got out on to No. 4 road, he set the points right for the train to pass from No. 4 road to No. 1 road, by shifting lever No. 34, then 31, 32, and 33, and these last, locked levers No. 34 and 31; those points work with a ground disc: that he did not shift nor attempt to shift any of those levers before the engine got off the road: that there was no difference except that it moved heavier in the movement of the lever No. 34: that about ¼ before 4 o'clock he had passed one of their own trains from No. 4 road to No. 1 road, and thence to the Market siding: that about two days before the accident occurred there was some difference in the movement of No. 34 lever, and he then sent a boy down to look at it, but there was nothing wrong with it: that he thinks the difference in the movements of Nos. 34 and 31 levers was due to the weather being drier."

From these statements it appears that as the engine moved ahead for the purpose of crossing to No. 1 up local line, the front or force rod of the two connecting rods of the points of the through crossing road broke, and the engine immediately got off the rails; the right tongue of these points had also been struck by the wheel of some vehicle as it passed over it, and it is certain that this could not have happened if the right tongue had laid in its proper position close to the right stock rail of No. 4 road.

No explanation is afforded as to what caused the connecting rod, or force rod, which is 1 foot 1¼ inches from the tips of the tongues, to fracture, with a noise like the explosion of a fog signal; the fracture is stated to have been a perfectly clean one, without any flaw in the iron.

I had the bolt taken out that fastens this connecting or force rod to the right tongue of the points, and then caused the points to be shifted by the lever in the signal-box, and set for the through crossing road, and it at once became apparent that the second connecting rod did not suffice to cause the tip of the right tongue to lie close to the right stock rail of No. 4 road; but it stood sufficiently open or far from it, to allow of its being struck by the flange of a right wheel of some vehicle; and I have arrived at the conclusion that it was the right leading wheel of the engine that struck this tongue, then mounted the rails, and was followed by the other wheels, and the engine thus got off the line.

Again, I have no doubt that the fracture of the first connecting or force rod, was caused by the sudden jerk or shock underneath this connecting rod, caused by the movement of the rods from the signal-box, in shifting the points, from being closed to the through crossing road, to their being opened for the Great Northern goods train to pass through them.

I have, &c.,

The Secretary,
(Railway Department),
Board of Trade.

W. YOLLAND,
Colonel.

Printed copies of the above report were sent to the London, Chatham, and Dover, and the Great Northern Railway Companies on the 17th April.

LONDON, CHATHAM, AND DOVER RAILWAY.

Board of Trade,
(Railway Department,)
13, *Downing Street, 3rd April* 1877.

SIR,

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 8th ultimo, the result of my inquiry into the circumstances connected with the two accidents which occurred on the 1st ultimo at Ludgate Hill station of the London, Chatham, and Dover Railway.

No persons were injured by the first accident, which occurred about 5.20 p.m. on that day, by an engine of a passenger train getting off the rails; but 19 persons have complained of being hurt in the second accident, which happened about 8.20 p.m.

Some damage was done to the permanent way and rolling stock, but the company have been very fortunate in escaping from the three accidents which occurred at Blackfriars and Ludgate Hill station without any serious result.

In consequence of an accident to a Great Northern goods train, which occurred about 4.15 p.m. on the same day, close to but south of Blackfriars station, and which is referred to in my report of this date, by which the up and down main lines at that station were blocked, it became necessary to work all traffic into and out of Ludgate Hill station, on the Metropolitan or local lines, Nos. 1 and 2, and also to cross over at Ludgate Hill station all trains going into or coming out of Holborn station.

Accordingly the 5.13 p.m. train from Holborn to the Crystal Palace ran into Ludgate Hill station on No. 4 or the down main line, and when all the passengers who were going by that train had got into the carriages, the train was drawn ahead on No. 4 road towards the bridge over the River Thames, and stopped so that it might be shunted back by the cross-over road to No. 3 or the up main line, where it would then have been in a position to cross to No. 2 or the Metropolitan down local line; but as this train was being backed towards the points of the cross-over road from No. 4 to No. 3 road, the engine, which had been standing in front of the train, and over, or nearly so, the points, at the river bridge of the through crossing road, between No. 4 and No. 2, got off the rails at these points, and slightly damaged the permanent way.

This occurred about 5.20 p.m.

The explanation which has been offered as to the cause of this engine getting off the rails at the river bridge points is as follows:—

While the 5.13 p.m. train was taking in passengers at the platform, a London and South-western train from Wimbledon ran into Ludgate Hill station on No. 1 or the up local line, and as it was requisite to send it on to Holborn, it was backed from No. 1 road through the long cross-over road into No. 3.

But the points of the two cross-over roads, No. 1 to No. 3 and No. 2 to No. 4, are interlocked with each other, and work together, so that to let the South-western train cross into No. 3 from No. 1, the signalman on duty (Dyer) had to open the cross-over road between No. 4 and No. 2, and it is surmised that the engine of the 5.13 p.m. train had its leading and driving wheels over the river bridge cross-over points, and that as the points were subsequently shifted to enable the South-western train to pass across, the wheels of the Crystal Palace engine stood on two roads, when it was called back, and thus got off the rails.

The evidence in the second accident, in which so many passengers were hurt, though it is hoped that none were seriously injured, is as follows:—

Wm. Helps, station inspector of traffic at Ludgate Hill station, states: That the 7.22 p.m. down passenger train from Moorgate Street station to the Crystal Palace on the 1st March should, in consequence of an engine having got off the rails at the river bridge points, have gone out on the straight road or No. 2 up Metropolitan line: that between 7.30 and 7.45 p.m., previous to this train leaving the station, he went up into the signalman's box, and told the signalman that as the cross-over road from No. 2 to No. 4 road was damaged by an engine getting off the rails at the points at the river bridge, this train was not to go out by the regular route along the main down line, No. 4; and the signalman to show that he perfectly understood what he was told, hung an iron on the lever to indicate that he was not to move that lever: that he then left the signal-box, went to the spot by the river bridge where the men were engaged in repairing the road, and then he left the platform and went down below, and was still there when a man came about 8.20 p.m. and told him that the train was off the road: that when he went to the river bridge he found that everything was right, except a rail which had been bent in the cross-over road, and which had been taken out for the purpose of being replaced by a new rail: that he did not call out at any time that No. 4 road was all right, although the fact was that No. 4 road was all right, and so were all the other lines, except the cross-over road between No. 2 and No. 4: that this cross-over road had not been used for about four hours in consequence of a Great Northern engine and break-van having got off the line at Blackfriars goods station about 4 p.m., blocking both up and down main lines."

Edward Whelpton, platform inspector, Ludgate station, states: "That Inspector Helps came to him at the south signal-box about 8 p.m., and told him that No. 4 road would be all right in a minute or two: that he would go down to the spot and see that all the things were cleared away, and that there was nothing on the line, and that if it was all right he would give the witness a signal with his hand-lamp, and he was to let the London and South-western train from Holborn go out on No. 4 road: that Inspector Helps gave the 'all right' signal with the hand-lamp, and he called up to signalman Dyer in the signal-box that the straight road, No. 4, was all right, but not the cross-over road: that they would have the South-western train out on No. 4 road: the signalman replied, 'All right:' that he then told the signalman that he would go to the north box to tell the signalman there to let the South-western train out on No. 4 road: that he

" then went to the north box and told the signalman " there what to do, and he replied, 'All right:' the 'South-western train did not leave Holborn until " after the 8.15 p.m. boat train passed out on No. 4 " road: this boat train passed out all right, and " nothing followed that train until after the accident " had occurred: that he was standing on the main " line platform after the boat train had gone, and the " signalman showed a green hand-lamp out of the " window of the signal-box to the Crystal Palace " train for it to leave: that the train started, and in " about another minute he heard a great rattling " noise: that the foreman of platelayers came up to " him, and told him that they had let the Crystal " Palace train out by the cross-over road, where they " had got a rail out: that he at once ran down stairs, " and told Inspector Helps what had happened, and " then went to the scene of the accident, and assisted " in getting the passengers out of the carriage: that " the signalman could not show the regular signal in " consequence of the working of the points having " been put out of order by the engine getting off the " line, and this obliged him to make use of a hand-" lamp."

Thomas Schofield, engine-driver of the 7.22 p.m. Crystal Palace train, which started at 8.0 p.m., or 38 minutes late from Moorgate Street station, states: " That he had a tank engine, seven carriages, and " two carriage-breaks, with two guards, and reached " Ludgate Hill about 8.15: that he waited there for " a signal about five minutes, and the regular signal " for the cross-over road was then lowered for him " to proceed: that it was a medium kind of night, " freezing at the time, and he saw after he had " started that there were men employed on the line, " by the lights which they were using, and as soon as " he saw the men there he shut off the steam, directly " after they had started, and he might be running at " from five to six miles an hour when the engine " dropped off the rails, and ran about the length of " an engine and two carriages' lengths on the river " bridge before it stopped: that the wheels of the " engine broke through the planking of the bridge, " and sank down: that four vehicles got off the rails: " that the engine, when dropping off the rails, bent " the screw off the break, so that the handle of the " break could not be moved at all: that neither his " mate nor himself were hurt: that he was told that " the cause of the engine getting off was due to a " rail being out, but he does not know whereabouts " it was."

Alfred Dean, fireman of the Crystal Palace train engine, states: " That the starting-signal, main-line-" signal, and the distant-signal from Blackfriars were " all off for them to leave the platform by the cross-over road, but there was no hand-signal shown that he saw: that he saw one man with a white jacket " on, just before they got off the rails, at which time " they were running at five or six miles an hour: " that no signal was given to them to stop before the " engine dropped off the rails."

B. Smyth, superintendent of the London, Chatham, and Dover Railway, states: " That Mr. Mills and " himself held an investigation in this office on the " 3rd March, and they heard the evidence of Inspector Helps and signalman Dyer, who admitted that " he had let this Crystal Palace train go on to the cross-over road, which had been disturbed by the " previous accident about 6 p.m.: that he had marked " his lever in the particular way described by Inspector Helps, and when asked how he came to let this " train out by the cross-over road, he stated, first of " all, that he believed Inspector Helps called out to " him from under his box that the road was all right. " This was denied by Inspector Helps, in the presence " of the signalman. He then said that it must have " been Inspector Whelpton. Inspector Whelpton was " then called in, and he made the same statement as he " had made to-day,—that he had called out that No. 4 " road was all right, but not the cross-over road: " that he then put it to signalman Dyer, how it " was that he, as an experienced signalman, could let " a train out, well knowing that this road had been " disturbed, without having assured himself completely that all was right. The signalman replied " that someone under the box had called out, and he " thought the road was clear, but he fully admitted " that he ought to have assured himself: that the " signalman had plenty of means at his disposal for " doing so: that he had been a signalman 9 or 10 " years, bore a very good character, and had received nine yearly bonusses: that he had given " notice of his intention to quit the Company's service a week before this accident happened: that he " was suspended from duty after the accident, and he " left a week after the accident occurred: and he " promised that when the inquiry took place he would " attend, but was unable to do so, as he had to be at " the police office with respect to a licence for a " public house which he had taken: that he came on " duty at 2 p.m. on the day in question, and would " have left at 10 at night.

" Nineteen passengers complained of being hurt, " but there were no serious cases."

From the preceding statements it will have been seen that the second accident was occasioned by the mistake of an experienced and well-conducted signalman (Dyer), in having allowed the 7.22 p.m. down passenger train to the Crystal Palace to leave the Ludgate Street station by the cross-over road from No. 2 to No. 4 down main line while that cross-over road had a rail out which had been bent by the previous accident, when an engine got off the rails at 5.20 p.m.

I did not see signalman Dyer, as he was prevented from attending at my inquiry, but I understand that he pleaded having heard someone call out from below his signal-box, which is placed above the lines of rails near the south end of the station platforms, that " the road was right;" and it is admitted that this was done, but that there was an addition to these words, " that the cross-over road was not all right."

There is also a discrepancy in the statements made by Inspector Whelpton, who called out that " the road was right, but not the cross-over road," and the driver and fireman of the Crystal Palace train, the inspector stating that the train was signalled out by hand-signal, while the driver and fireman of the train say that the regular signals were lowered for them.

It will also have been seen that the engine broke through the planking between the rails of the river bridge after it left the line, but most fortunately did not break any of the transverse girders, or the consequences might have been exceedingly serious.

I have, &c.,

The Secretary,
(Railway Department),
Board of Trade.

W. YOLLAND,
Colonel.

Printed copies of the above report were sent to the London, Chatham, and Dover, and the London and South-Western Railway Companies on the 17th April.

MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE RAILWAY.

Board of Trade,
(Railway Department,)
SIR, 13, *Downing Street, 6th February* 1877.

I HAVE the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 24th ultimo, the result of my inquiry into the circumstances which attended a collision that occurred on the 22nd ultimo, near Guide Bridge station, on the Manchester, Sheffield, and Lincolnshire Railway, between a passenger train belonging to the London and North-western Railway Company, and an engine, with a waggon attached, belonging to the Manchester, Sheffield, and Lincolnshire Railway Company.

Twelve passengers have complained of having been injured on this occasion, of whom two are supposed to have been badly hurt; and the guard of the passenger train was also injured.

The two locomotive engines, the break-van of the passenger train, and a waggon of the Manchester, Sheffield, and Lincolnshire Railway Company were damaged.

The London and North-western Railway Company have running powers over the Manchester, Sheffield, and Lincolnshire Railway Company's line from Guide Bridge to Staleybridge, which branches off from the main line of the Manchester, Sheffield, and Lincolnshire Railway towards the north, three or four chains on the eastern side of the Guide Bridge station.

There are sidings on each side of the line to Staleybridge, contiguous to Guide Bridge station, and those on the western side of this line extend to what is called the Brookside Brewery sidings: the sidings on the eastern side of this line are called the Staleybridge sidings.

A signalman is on duty at a signal-box, which is about 370 yards from the eastern end of Guide Bridge passenger station, but the working of the points and signals have not been concentrated, so as to be worked from the Brookside Brewery siding signal-box, and the signalman has to leave his box for the purpose of holding the points of a through crossing on the line to Staleybridge, which are about 140 yards from his box in one direction, and other points towards Guide Bridge, at a less distance in the other direction.

The approach from Guide Bridge station along the up line to Staleybridge is only protected by a distant-signal, but the driver of the passenger train quite understood, that when this signal is exhibited at "danger," it is intended to cover the first as well as the second cross-over road, which he has to pass before he gets clear of the Guide Bridge station sidings.

The second cross-over road is about 140 yards north of the Brookside Brewery siding signal-box, and 160 yards north of the first cross-over road nearer to Guide Bridge station.

The traffic on this branch line is not worked on the block system.

The evidence of the company's servants who were concerned in this collision is as follows:—

James E. Harris, driver of the 6.50 a.m. down passenger train from Stockport to Staleybridge, five years a driver, and nearly 12 years altogether in the company's service, states: "That he came on duty at "5.50 a.m., and the passenger train consisted of a "tender engine, van, and three coaches, and he left "Stockport about 6.52 a.m: that he reached Guide "Bridge at 7.8, and left at 7.10: that he waited "for the platform-signal which was lowered for him "to proceed, and as the goods siding distant-signal "was on at 'danger' against him, he would have been "prepared to stop at it, but he whistled for it to be "taken off, and it was immediately lowered before he "passed it: that the object of that signal is to indicate to drivers, that there is an obstruction on the "line somewhere near the goods siding junction, and "when it is kept on, he always prepares to stop clear "of the first cross-over road, but there is no home-"signal: that he proceeded perhaps 200 yards beyond "the goods siding signal, and then saw something in "front of him, when he was not more than 35 or 40 "yards from it: that it was dark, and he could just "see it indistinctly: there were no tail lights nor head "lights in front of it: that he thinks he might be "running from 10 to 15 miles an hour when he first "saw the obstruction, and he immediately reversed "his engine, and his mate endeavoured to apply the "tender break: that he had no time to whistle for "the guard's break, and he was running nearly at the "same rate, when he ran into a truck which stood "behind an engine, on the points leading back from "the up main line into the Staleybridge sidings: "that his engine was thrown off the rails, and fell "down the embankment on the left side: that the "tender also got off the rails, and the truck attached "to the other engine was also thrown off the rails: "that the passenger train carriages remained on the "rails, and he is not aware whether any of them "were damaged or not: that immediately after the "collision he jumped off, and his mate did the same; "both got a good shaking, but were not otherwise "hurt: this occurred about 10 or 11 minutes past "7 o'clock. The other engine was not thrown off "the rails."

Moses Garlick, signalman at Guide Bridge, about three and a half or four years, states: "That he came "on duty at 6.15 a.m. at the Brookside Brewery "siding: that at 7.7 an Oldham goods engine arrived "from Guide Bridge station, and he turned the "engine and break into the siding next the canal "off the line to Ashton-under-Lyne: that the Staley-"bridge engine arrived opposite his box with one "truck attached, and the distant-signal between his "box and Guide Bridge was then standing at "'danger,' as he had placed it at 'danger' as soon as "the Oldham goods engine arrived: that he then "ascertained from the driver of the Staleybridge "engine (Manchester, Sheffield, and Lincolnshire) "where he was to go, and he said he wanted to go "into the down siding (down line to Guide Bridge) "for a train: that he left him standing on the up "main line and went to the box for the purpose of "placing the down siding signals at 'danger:' whilst "he was there, the Oldham goods engine finished its "work, and was ready to come out, and he allowed "the Oldham engine with this train to come out "on to the up main line, and the Oldham engine drew "his train ahead to the top points, for the purpose "of knocking his train of about five waggons across "to the down main line: the Staleybridge engine "was still standing ahead on the up main line: the "Oldham engine then kicked its train on to the down "main line, and then travelled along the up main "line to the next cross-over road, to get round his "train: that he then went from the top points to the "Staleybridge engine, which was further ahead, to "turn it across to the down line sidings (Staley-"bridge sidings): that he could not turn the engine "across at once, as the Oldham engine had left some "of its waggons foul of the cross-over and through "road; and he was waiting for the Oldham engine "to back to his waggons and fetch them away, and "whilst thus waiting he saw the passenger train "approaching, and saw the collision take place: that "he thinks the passenger train was travelling at "from 12 to 15 miles an hour, and the driver of the "passenger train engine was close upon the truck "attached to the Staleybridge engine, before he

" became aware that there was any obstruction on " the road ; that he did not see any tail light on the " truck : that he ran back towards the passenger " train, but had not time to show any red light " with his hand-lamp, but he called out to the driver : " that the top points are the farthest which he has " to work from his cabin towards Staleybridge, and " he has not to go so far to work points towards " Guide Bridge : that it is not the practice for the " shunter to pull off the signals or any of them, as " he does it himself : that he did not notice whether " the up distant-signal was on or off as the passenger " train approached him : that he walked along the " 6-ft. towards his signal-box, and went there at " once and found the lever of the up distant-signal " standing at 'danger' as he had left it, and he " does not know whether that signal was taken off or " not : that he did not tell anyone to take it off : " that the collision took place at 7.13 a.m. by his " watch : that it was not possible to see an object at " any distance that morning : that he is a relief " signalman and only works at that box one day in " each week."

James Mills, shunter in the Guide Bridge yard, about one month, and two years in the company's service states : " That he came on duty at 6 a.m. : that " about 7.7 the Oldham goods engine and break-van " came up to the Brookside box, and he had five " waggons in the canal siding which that engine was " to take away : that during the time the engine was " backing to those waggons, the Staleybridge engine " came up to the same place with one waggon, but " he did not observe it, nor knew that it was there " until after the collision had occurred : that he was " engaged in coupling up the waggons for the Oldham " engine to take away, and when they were coupled " up he shouted out to the signalman, and asked him " if he was ready for the Oldham engine to come out " from the siding, and the signalman then signalled " them out by a hand-lamp ; that when that engine " had got out on to the main line, he had to shunt " those waggons across to the other main line, and " when the engine had put them across, the engine " came back on the up main line and he opened the " points and turned the engine across to the other " main line, by the cross-over road nearer to Guide " Bridge station in order that it might get to the " other end of its train : that when he had seen the " engine across to the other line he went to the " signal-box and looked up the line (towards Staley- " bridge) and could not observe anything, and he " then took the up signal off, as he heard the passenger " train engine whistling for it to be taken off ; that " they are in the habit of assisting one another at " that place sometimes, and he had many times taken " off a signal before, since he has been a shunter, but " he had never done it with signalman Garlick : that " as soon as he took the signal off, the passenger " train passed, and he placed the signal again at " 'danger :' that he was at the box when the pas- " senger train passed, not travelling more than 10 " or 11 miles an hour, and he did not hear the " driver whistle, but he heard the noise of the " collision about 7.15 according to the clock in the " signal-box ; that he ought not to have pulled any " signal off, without getting the permission of the " signalman on duty to do so : that he has never done " what he did on this occasion, take off a signal " without having had permission or been told to " do so."

Charles Annett, breaksman of the Staleybridge train, states : " That about 7.0 a.m. the van of his train was " placed at the tail of the train then standing in the " Staleybridge sidings, as it had to be taken to Staley- " bridge, and the engine then came out of those " sidings with one truck attached : and about 7.9 his " engine passed along the up line to the Brookside " sidings for the purpose of getting to the other end " of the train : that they stood about two minutes " beyond the top points, and then the driver backed " across to the down main line for the purpose of " pushing the trucks of the Oldham train clear, but " when he got there those trucks had been removed, " and he then returned to the up main line : that he " rode in the truck, and had a red light in his hand- " lamp, and he got out of the truck while they were in " the act of backing to the down main line, to hold the " points of the cross-over road, from the up to the " down main line, and he showed his red light towards " the advancing passenger train : that he saw the " passenger train when it might be 100 yards from " them : that the Staleybridge engine was standing " still when the collision took place, and when he saw " the passenger train coming he ran towards it and " showed a red light towards it : that the signalman " Garlick was holding the top points all the time : that " he gave the signals for the driver to go ahead when " he found that the Oldham trucks had been moved."

From the preceding statements it will be seen that this collision was caused by the wholly unauthorised act of the shunter (J. Mills), in the Manchester, Sheffield, and Lincolnshire Company's Guide Bridge goods yard, in having taken off the up distant-signal, the only up signal, as soon as he heard the whistle from the London and North-western Company's passenger train engine, without having previously ascertained whether there was any obstruction on the line. This man appears only to have been employed as a shunter for one month.

Had the working of the points and signals at the Brookside Brewery and Staleybridge sidings been concentrated in a signal-box, and been properly interlocked with each other, it would not have been possible for the shunter to have acted as he did on this occasion.

No other servant of either of the two railway companies concerned was to blame.

The Manchester, Sheffield, and Lincolnshire Rail way Company are altering their sidings, and the connections with the main line on the eastern side of Guide Bridge station : but they do not appear to be doing much by the concentration of points and signals, and interlocking them, to prevent collisions similar to the present one from taking place.

Thus, in the return for the 31st December 1874, the company state that they had not concentrated the working of the signal and point levers in 199 cases on their branch lines, nor interlocked them in 197 cases : while by a similar return for the year ending 31st December 1875, they appear not to have concentrated in 215 cases, nor interlocked them in 208 cases.

This would apparently indicate that, as regards their branch lines, the company's progress towards complying with the usual requirements for new lines of the inspecting officers of the Board of Trade, as regards the concentration and interlocking of points and signals, has been a retrograde one.

I have, &c.,

The Secretary,
(*Railway Department,*)
Board of Trade.

W. YOLLAND,
Colonel.

Printed copies of the above report were sent to the Manchester, Sheffield, and Lincolnshire, and the London and North-Western Railway Companies on the 26th February.

MIDLAND RAILWAY.

SIR, *Derby, February 22nd*, 1877.

IN compliance with the instructions contained in the Order of the 19th instant, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 18th inst. at the Derby station, on the Midland Railway.

In this case, the 11.22 p.m. mail-train from Birmingham for Derby was approaching the Derby station within one minute of its proper time, when, in place of being stopped at the ticket-platform, it ran forward and came into collision, with considerable violence, 55 yards beyond the end of the ticket-platform, with, first an engine, and secondly a train of empty-carriages which were standing near the station.

Twelve passengers have up to the present time complained of injury. No servants of the company were materially injured.

The approach to the Derby station on the west is undergoing alterations. New signal-cabins have been erected, the lines and connections have been re-arranged and improved, and they will shortly be ready for the inspection of the Board of Trade. Meanwhile a temporary signal-cabin is in use at the west end of the ticket-platform, which is 150 yards long. There is a distant-signal worked from this cabin, 655 yards from the east end of the ticket-platform; and a semaphore-signal, at the east end of the ticket-platform, is about 160 yards east of the signal-cabin. This latter signal is worked by a lever in a cabin nearer to the station, called the London-Road-junction cabin.

Evidence.

George Naylor, the engine-driver of the 11.22 p.m. mail-train from Birmingham, states that he left Birmingham punctually at 11.22 p.m., and travelled in due course, until he approached the Derby station. In approaching that station he shut off his steam rather sooner than usual, namely, at a bridge on the west of Melbourne junction, about 2,500 yards from the point of collision. The fireman went at once to the break-handle, and after the train had run a distance of perhaps 1,000 yards, at a speed of about 45 miles an hour, the tender-break was applied, the wheels were skidded, and the train appeared to be under proper control. He had seen the distant-signal worked from the ticket-platform at danger before he told the fireman to apply the tender-break, and as they approached the distant-signal it was taken off. He then shut his steam off from the injector, and on turning round again he observed the fireman screwing down the feed-pipe, and noticed that the break-handle was released, and turning round as if it were loose. He, therefore, applied the break himself and reversed his engine, but he did not seem to recover command of his train, which shortly afterwards came into collision with the engine standing in front of the empty-carriage train, at a speed of 10 or 12 miles an hour. He ought to have stopped with his engine at the Derby station end of the ticket-platform, and he intended to do so. It was also his duty to leave the train at the ticket-platform, and take his engine into the North-Staffordshire engine-shed, and turn it in readiness to leave Derby again with the 1.45 a.m. passenger-train for Birmingham. He cannot account for his having run past the ticket-platform except by saying that his fireman released his break, and the train, therefore, retained such velocity that he could never afterwards get command of it.

George Bonser, the fireman, confirms the evidence of the engine-driver. He states that he was strange to the road. He had only been twice before on this part of the line with a goods train, and once before on the same evening with a passenger train. He applied the tender-break in the first instance when he saw the driver shut off steam. He then released the break again of his own accord, when he saw the distant-signal worked from the ticket-platform, and 655 yards from the point where his engine ought to have come to a stand, taken off as he approached it. He did so with the intention of allowing the train to run up to the ticket-platform. As soon as the engine-driver told him again to apply the break, he did so as tightly as he could. He would not have taken the break off as he did in approaching the distant-signal if he had thought that the train was so near the ticket-platform. It was quite dark. If it had been daylight he would have seen where he was, and would not have made such a mistake, but it being dark, and not being used to the road, he made the mistake, and hence the collision. He had approached the station in the dark on the previous occasion the same night.

George Arthur Lugge, head-guard, was riding in a North-Eastern break-van next to a parcels-van, which was next behind the tender. The train was composed of an engine and tender, a parcels-van, a break-van, a composite-carriage, a third-class carriage, two post-offices, a first-class, a composite, and a third-class carriages, a break-van, and a parcels-van. He heard the engine-driver whistle for the distant-signal worked from the ticket-platform. He looked out of his van and perceived the signal was at danger, and at once applied his break. He returned into his van, leaving the break applied, to put some way-bills into a parcel, and then again went to the look-out window, and fancies he saw the distant-signal pulled off as he was passing under it. He slightly released his break for about a minute, and at once re-applied it for stopping at the ticket-platform, and went down his van, leaving the break on. He then heard the driver whistle sharply three times for his break. He looked out again, and saw several red lights in front of him, and noticed that the driver was going much too fast to stop at the ticket-platform. He shortly afterwards felt the shock of the collision, and was thrown down on his back. He was slightly hurt in consequence, but has not been off work.

John Bowker, the under-guard, was riding in a break-van at the tail of the train. The first thing he noticed in approaching Derby was the driver whistling for the distant-signal from the ticket-platform. He applied his break, and returned to sort his letters, and left the break on until the collision occurred. He was thrown down and hurt a little across the chest, but not sufficiently to make him leave his work.

Henry Herbert Loveday, inspector in the service of the Company, was in the despatch-office of the Derby station when he heard the noise of the collision; he went immediately to the spot, and found that the 11.22 p.m. mail-train from Birmingham had come into collision with an engine standing on No. 1 line at the station, 55 yards inside of the starting-signal at the north end of the ticket-platform. The engine of the mail-train had struck the tender of the engine which was waiting on the same line to be attached to the mail-train as soon as the engine then on it had been uncoupled from it, and to take it forward to Leeds. No vehicles on the mail were thrown off the road, nor was the engine with which it came into collision, but this engine was knocked forward against a train of empty-carriages standing also on No. 1 line, and some of these carriages were thrown against

and upon the station-platform. The buffer-stop at the end of the line was knocked down, and three vehicles passed over it. From inquiries which he made, and from the results produced, he considers that the speed did not exceed 12 miles an hour at the time of the collision.

William Ashman, the signalman on duty in the temporary cabin at the west end of the ticket-platform, received the "Be-ready" signal for the mail-train from Birmingham at 12.31, and the "train-on-line" signal at 12.35, which latter signal he passed forward to the London-Road junction. The London-Road junction man turned off his signal, and he then took off his distant-signal and home-signal to allow the train to run to the ticket-platform. He saw it pass him rather faster than usual, and too fast to be able to stop at the ticket-platform. He noticed that the fireman had the tender-break on, and the rear guard had his van-break on, but he could not say whether the front guard had his break on or not.

William Johnson, the signalman in the London-Road junction-cabin, saw the mail-train approaching from Birmingham on the night in question about 12.35, and received the usual telegraph-signals in regard to it. He took off his distant-signal to allow it to run up to the ticket-platform, but he kept his home-signal at danger because he wanted the train to stop at the ticket-platform, where it was due to stop and to change engines.

Conclusion.

This accident was caused by the mistake of the inexperienced fireman of the passenger engine in releasing his break after he had applied it, on seeing the distant-signal worked from the ticket-platform turned to "all right." He would not, of course, have made such a mistake if he had been well acquainted with the road, and with the distance between the signal in question and the ticket platform. The engine-driver appears to have been a most respectable man, with an experience of 20 years, during which he has received four gratuities, and he has no serious offence recorded against him. It would, no doubt, have been better, knowing the ignorance of the fireman with regard to the road, if he had kept a sharper look-out upon him; but he probably could hardly be expected to prevent him from taking off his break at such a moment, when he had no idea that he was likely to do so foolish a thing. It was clearly not right to allow a fireman with so little experience as this man had received of the road to do duty as a fireman with a mail-passenger-train on a dark night, and it was not fair upon the engine-driver that he should be accompanied by a fireman having so little experience of his duties.

I have, &c.,
H. W. Tyler.

The Secretary,
Railway Department,
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th March.

MIDLAND RAILWAY.

Sir, *Derby, April 6th*, 1877.

In compliance with the instructions contained in the Order of the 27th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances attending the collision that occurred on the 22nd ultimo, at the Derby station of the Midland Railway.

In this case, the 6.30 p.m. passenger-train from Trent for Derby, viâ Castle Donington, came into collision, on entering the Derby station, with a train of empty-carriages belonging to the London-and-North-Western Railway Company, which, after arriving as the 5.30 p.m. passenger-train from Birmingham for Derby, was being shunted back on to a platform line to be reformed for the return journey. A third-class break-van on the London-and-North-Western train was destroyed, and the sides of the Midland vehicles were scraped, but no other damage was done. No passengers complained of injury.

Description.

The only portion of the station-yard at Derby to which it is necessary to refer in this report is the west end of it, including a portion of the passenger-platform known as the narrow platform, used for the arrival mainly of the London-and-North-Western trains and of the Midland trains from the west, and for the departure of the London-and-North-Western trains and certain Midland branch trains. All the trains approaching this end of the station are due to stop at the ticket-platform, on the west of this narrow platform, for the collection of tickets. There is a signal-cabin opposite to the west end of the narrow platform above referred to, from which the points and signals at this end of the yard are worked, but there is a cross-over-road between the narrow-platform line, No. 1, and the line adjacent to it, No. 2, which runs forward to the broader platform in the station. This cross-over-road has recently been inserted, and the points of it have not yet been connected with a lever which has been prepared for them in the signal-cabin. It was in the use of these points that the present collision occurred.

The Midland passenger-train consisted of an engine and tender, three passenger-carriages, a break-van, and a milk-van. It left Trent punctually at 6.30, and was approaching the Derby station at 7.15 p.m., right time.

Evidence.

The engine-driver, *James Birkin*, states that he brought his train to a stand in the usual way at the Derby ticket-platform, and after the tickets had been collected he received the usual signal from the guard, and the starting signal was lowered from the signal-man's cabin, to allow him to proceed forward into the station. He had seen the carriages standing on No. 2 line, but had not noticed that they were in motion until as he was passing the points leading from No. 2 to No. 3 line. They ran back, and came into collision with his train. He had no warning whatever to intimate to him even to shut off his steam before the collision occurred.

The fireman, *William Astle*, has nothing to add to the evidence of the engine-driver, which he confirms in all respects.

The guard, *Herbert Ashby*, was riding in a break-van behind the passenger-carriages. He gave the engine-driver a signal to start from the ticket platform when the tickets had been collected, and they were proceeding, he believes, at a speed of about 5 miles an hour towards the station, when, without any warning, he felt the shock of the collision. He applied his brake as soon as he heard the crash, and was not injured.

The London and North-Western train left Birmingham at 5.30 p.m. punctually, and reached Derby at 7.10 p.m., also punctually, consisting of an engine and tender and six carriages, of which two, one at each end, were brake-carriages.

The engine-driver, *David Yates*, states that he drew up to the station on No. 2 line, and his train remained at the platform on that line for about five minutes, while the passengers alighted. During that

time, the shunter, Duffield, got in between the tender and the leading-carriage, but he did not know whether he had uncoupled the engine and tender from the train. It has not been a regular practice for the tender to be uncoupled before the train was shunted back, but he has known it to be done before. After going between the tender and the leading-carriage, the shunter came on to the platform, and said "Come back" twice, and the shunter then got into the brake-van next to the tender, and made signs with his arm for him to set back. He therefore pushed the train back, as he thought, towards No. 1 line, but he found that instead of going over the cross-over road to No. 1 line he ran back along No. 2 line, and before he could open his whistle his carriages had left his tender, and there were several yards between them, and the carriages came into collision with an incoming Midland train.

The fireman, *Thomas Hall*, states that the evidence of his mate is quite correct, and he has nothing to add to it.

The guard, *William Darby*, left the rear van in which he was riding, on the arrival of the train in the Derby station. He walked forward to the front van to see if all the luggage was out and claimed, and then went forward and spoke to the driver, and saw the shunter go and call the driver back. He went to the Parcels Office to get a value-parcel signed for, and as he was entering the Parcels Office door he heard the crash of the collision. He had completed his duty with the train for that journey, and left it in charge of the shunter while it was being set back into No. 1 line.

George Duffield, a shunter, in the employment of the Midland Railway Company at Derby, has been working in the same capacity for about 12 months. He saw the Birmingham train arrive about 7.10 p.m., and he was then walking towards the station from the west. He passed the ground-pointsman's cabin, and saw there Stevens, the ground-pointsman, who attends to the level-crossing and the cross-over road points. Stevens said to him, "I suppose you will want that train backed into No. 1," and he replied, "Yes, he should." Stevens also advised him to apply vinegar to his nosé, which was scratched, and he left Stevens, saying to him "Turn us in", and thinking that he would hold the cross-over road points for the carriages to back from No. 2 to No. 1 line. He then went forward and uncoupled the tender from the rest of the train. He did so, as he thought it might have saved time. He knows that he was wrong in uncoupling the engine before the train was shunted back into No. 1 line. He has been doing the same work with the same train every evening for a considerable period. He generally uncouples the tender from the carriages while the train is standing on No. 2 line, if there is nothing in the way, although he knows it is contrary to the company's regulations. He called the train back, expecting that Stevens would be at the points. He told the engine-driver to blow his whistle, got into the van, and called him back with his hand. When he found the carriages were going in the wrong direction, he applied the break, but was unable to avoid the collision.

James Stevens, ground-pointsman, at the west end of the Derby yard, says that Duffield came towards him in a very confused manner from the west of the yard on the evening in question, about 7.5. Duffield said he had been in a skirmish over a lamp, and he had got his nose scratched, and he recommended him to apply vinegar to it. He told Duffield as he went forward, to shout and let him know whether he wanted the train back in No. 1 line, that he might, if necessary, turn it into that line by the cross-over-road points. He did not know that Duffield had uncoupled the engine and tender from the carriages, and he did not hear him shout for the points to be held. He therefore left them alone whilst the carriages backed through them. He was standing at the points with his lamp in his hand as the carriages went over them, and would have turned them over if Duffield had told him to do so.

Mr. Maxey, the station master at Derby, states that his attention was called to this accident after it occurred. He found that a mistake had been made in shunting back the London-and-North-Western carriages, by their having been allowed to run back on No. 2 line, in place of running back through the cross-over-road on to No. 1 line, owing to a misunderstanding between the shunter and the ground pointsman, and that the shunter had himself uncoupled the engine and tender from the carriages before telling the driver to set back. He has frequently ordered the various shunters about the yard not to practise fly shunting, and has threatened one man to suspend him if he ever did it again. He does not remember having cautioned shunter Duffield in connection with this particular train, but he has cautioned him generally, and Duffield admitted immediately after the accident that he had done wrong.

Conclusion.

This accident has, then, been caused by a misunderstanding, in the course of a shunting operation in the Derby station-yard, between a shunter, Duffield, and a ground-pointsman, Stevens; Duffield expecting that Stevens would move the cross-over-road points to allow the train to set back from No. 2 to No. 1 platform line, and Stevens waiting for a distinct order from Duffield so to move those points; but the shunter, Duffield, was clearly acting in disobedience to the instructions which had been given to him in uncoupling the engine and tender from the carriages before ordering the engine-driver to set back with the train. He has been punished for this offence. The Midland Company had already, in completing the re-arrangement of the yard, given the order, before the accident occurred, to connect the cross-over-road points with the signal-cabin. These points will in future be worked by means of a lever in the cabin; and it will be the duty of the shunter not to back a train from No. 2 line without first communicating with the signalman in the cabin; and the engine or tender will not be uncoupled from the train until it has been so shunted back, in whatever direction it may be intended to go.

I have, &c.,

H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Midland, and the London and North-Western Railway Companies on the 18th April.

MIDLAND GREAT WESTERN RAILWAY OF IRELAND.

Board of Trade,
(*Railway Department.*)
13, *Downing Street, London, S.W.,*
28th March 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 12th instant, the result of my inquiry into the circumstances connected with the accident which occured on the 10th instant at Clonsilla junction, on the Midland Great Western Railway of Ireland.

In this case, as the 5.5 p.m. down passenger train from Dublin for Kingscourt and Athboy, which consisted of engine, tender, horse-box, four coaches, guard's van for Kingscourt, three coaches and guard's van for Athboy, 10 vehicles in all, coupled in the order stated, was passing through facing-points at Clonsilla junction, the fifth vehicle from the tender left the rails and turned over on its left side; the remainder of the vehicles, with the exception of the last, which remained on the proper line, also left the rails.

Five passengers complained of having been injured, the most serious injury having been a cut in the head.

The carriage which was upset had its side panels damaged; the couplings between it and the one in front of it gave way.

At Clonsilla junction the Meath branch joins the main line with facing-points on the down line and trailing-points on the up line. The main line curves (facing westward) with a radius of three-quarters of a mile to the left and the Meath branch with one of half a mile to the right. The signal-cabin, in which the point-levers and signal-levers are concentrated and properly interlocked, is situated on the north of the main line and 16 yards east of the facing-points. These points are not provided with a locking-bar. This part of the line is worked on the absolute block system. The points were in good working order when I examined them on the 26th, and are stated to have been so at the time of the accident. The gauge was fairly true. The points are 14 feet long, fished at the heels with fish plates 9 inches long, secured by two bolts; there are six chairs to each tongue, each chair being fastened to the sleeper by two fang bolts. At the time of the accident the cant (or super-elevation) of the right rail of the down line was 1½ inches at the toe of the points; this was suitable to the curve of the main line had there been no junction of a branch curving in the opposite direction to the main line. The gradient at this part of the line is very slight. Clonsilla, station at which the train had stopped, is about 600 yards east of the junction.

The evidence relating to the accident is as follows :—

1. *Michael Toher*, signalman 4¾ years. All the time at Clonsilla junction: "I came on duty at 9 a.m. "on 10th March for an 11 hours shift. The train "from Dublin to the Meath branch was due at about "5.27 p.m. I got the block-signal for this train from "Coolmines about 5.21, and lowered my distant-signal "for it; this is also the station home-signal. I put "this distant-signal to danger upon the train arriving "at Clonsilla station, and then, upon the engine "whistling on leaving Clonsilla station, I set the "facing-points for the branch, and lowered the "branch home-signal. The train arrived at about "5.28, and was running about the usual speed. I "was standing at the window watching the train, and "when it was opposite the cabin I thought one of "the carriages was running unevenly. I heard no "rattling in the locking-frame. The last carriage "stopped just foul of the main line. A down main "line train was due to pass the junction about 5.53, "but no up train was due at this time; this down "train arrived at about 6 o'clock, and I had to stop "it. I made no examination of the points after the "accident, but there was nothing wrong with the "frame, and I was able to make the points for the "following train. I was quite alone in the cabin "when the accident occurred. I am quite sure I was "at the window when the train passed. I did not "put up the home-signal till the train had stopped. "I am not in the habit of doing so till after I have "seen the last vehicle pass. I have known nothing "go wrong at these points since they were put in "about two years since. I have formed no opinion "as to how the accident occurred."

2. *John Gaynor*, ganger of length between the 7 and 10½ miles on the main line, including the junction crossings]: "I have been in this position 11 "months. I was on the ground about 10 minutes "before the accident, gauging the roads. I was "standing on the down main line near the siding "points. A shout from some of my gang, who were "packing up a tie near the up signal-post, made me "turn round, the train being then just opposite to me. "I tried to attract the driver's attention. A carriage "then turned gently over. I examined the points im-"mediately afterwards; there was nothing wrong with "the gauge or with the points, except that the second "connecting bar was slightly bent. The first wheel "mark was on the second sleeper from the heel of "the points, where there was a mark on the "flanges of both outer main line and branch rails. "The last time I had done anything to these points "was a fortnight ago, when I had packed up the "heels. On the Thursday after the accident I "again packed up the heels. I never saw the toes rise "when wheels were passing the heels. I raised the "whole of the outside rail of the down branch line from "about half an inch at the heel, to nothing at the point. "Nothing was injured in the road, and no repairs "had to be made. I attributed the accident to "something being wrong with the carriage wheels, "the road being in perfect order."

3. *Michael Coina*, driver 24 years, running on the Meath line for about 14 years: "I was in charge of "the 5.5 p.m. train from Dublin to Athboy and Kings-"court. My engine was a tender engine (running "engine first), and the train was composed of 10 vehi-"cles. There were two guards with the train. We "started five minutes late, and stopped first at Clon-"silla, and left it at 5.30, five minutes late. The "weather was fine. The down branch home-signal "was lowered for me when I whistled for it on "leaving Clonsilla station. Our speed did not ex-"ceed five miles an hour when we reached the junc-"tion, and the first thing that drew my attention "was feeling a jerk as we passed the point where "the carriage afterwards turned over. I at once "looked round and saw a carriage in the act of cap-"sizing. I immediately shut off steam, had the "tender break applied, and stopped in about 10 yards. "The horse-box and three coaches next it remained "coupled to the tender, with all their wheels on the "proper branch rails, then came the carriage upset on "its left side, and then five vehicles mostly off the "rails. The couplings had given way at the front "of the upset carriage. I cannot speak as to the "rear couplings. I have not formed any opinion as "to the cause of the accident; the wheels of the "upset carriage appeared all right. I never felt "any unusual oscillation in running through these "facing-points, nor do I remember any previous "accident at them. I had not put on any steam "after the engine had passed the points. I should "have done so after all the train had passed through. "We are limited by rule to a speed of eight miles an "hour at all facing-points. I know that the home-"signal remained off till I had passed it, but I did "not notice it afterwards. Fireman John Doyle was "alone with me on the engine."

4. *John Doyle*: "I have been fireman four years, "and have been running on the Meath branch about "15 months. The Clonsilla junction branch home-"signal was lowered on our whistling for it on "starting from Clonsilla station. It remained down "till the engine passed it, but was at danger when I "looked back after the accident had occurred. I "don't think our speed at the facing-points was more "than five or six miles an hour. There was very "little steam on. I felt nothing unusual in going "through the points. Just about the up signal-post "I noticed two carriages off the road, and went at "once to my break, and then I saw one of the "carriages capsized. There was a gap of about one "or two carriage lengths between the portion of the "train that remained attached to the engine and the "upset carriage. I saw nothing wrong with the "wheels of the upset carriage, nor with the facing-"points. The driver had not put on any extra steam "after passing the facing-points. Our usual place "for increasing speed is a little beyond the point of "the accident. The driver gave the break whistle "as soon as he saw what was happening."

5. *Patrick McLoughlin*, guard 18 years: "I "was riding in the van of the Kingscourt portion of "the 5.5 p.m. down train, *i.e.*, in the sixth vehicle "from the tender. I was alone. We were six "minutes late in leaving Clonsilla station. I saw the "branch junction home-signal lowered for us, and I

" think our speed did not exceed five or six miles an " hour at the junction. At the time of the accident " I was getting ready parcels for Dunboyne station. " I got first one jostle and then another and then the " van stopped; I think the first jostle was when the " van was about one or two carriage lengths past " the points. I then got out, the front wheels of the " van were off the rails to the left, and the hind ones " just on, and in front of my van was a first-class " carriage on its left side, lying obliquely across the " rails, with its body on the main line. The hind " couplings had not given way, but the front ones " had, there was not a gap of more than 9 or 10 yards " between the upset carriage and the next one in front " of it. The rest of the vehicles behind my van were " all off the rails to the left with the exception of the " last van, all the wheels of which were on the branch " or proper line, and the couplings were all good. This " last van was a few yards through the points. " I cannot say when the home-signal was put to " danger. I did not see the points for some time " afterwards, but when I saw them they were all " right. My break was off at the time of the accident. " I did not hear the break whistle, nor did I feel any " sensation as if steam had been suddenly put on. I " had never before felt any jerk at the points. Our " speed at these points never exceeds six or seven " miles an hour. Thomas Carolin was the other " guard, he has been a guard about three years."

6. *Thomas Carolin*, guard for one year on the Meath branch, and two years previously guard of mixed trains : " On the evening of the 10th March I " was in charge of the rear portion of the 5.5 p.m. " train for Athboy. Guard McLoughlin gave the " signal for the train to start, and I went into the " hind van, and the engine whistled for the junction-" signal and the train started. My break was off. " The train ran up to the junction at the usual speed, " and as far as I can judge the speed was not more than " six to seven miles an hour when passing the facing-" points. I was sorting the Dunboyne luggage when " the train suddenly stopped with a very slight shock, " and on looking out I saw one of the carriages over-" turned, and the hinder carriages off the rails. My " van was not off, and came to a stand about 20 yards " from the facing-points. I saw that the points were " properly made, and the train had kept to its proper " road, viz., the branch down line. I did not notice the " home-signal arm being placed to danger, or even if " it had been raised when I got out of the van, being " occupied with the passengers. I did not hear the " driver whistle for the breaks, nor can I recall " having felt any jerk previously to the stoppage."

The first mark of any wheel being off the rails was at the second sleeper from the heels of the facing-points on the bottom flanges of the down branch and down main line near rails ; the next mark was on a bolt head on the outside of the branch near rail at the fourth sleeper from the point heel, after which marks became frequent both on the outside and inside of the down branch rails ; one of the connecting rods was slightly bent. The upset carriage stopped about 50 yards from the facing-points.

The upset carriage was a first-class four-wheeled one, having a total length of 29 ft. 2 in., and a wheel base of 14 feet. It was travelling between two six-wheeled carriages, having about the same height of buffer centres as itself. The tyres of the four-wheeled carriage were of cast steel. They had commenced running about three years since, and had not been turned up. They were not much worn. The wheels were fairly true to gauge, the front axle was slightly bent. The springs consisted of 13 plates each ; on taking them to pieces I found that the plates were all perfect with the exception of one, fourth from the bottom, in the right trailing spring, which plate was broken.

The probable cause of this accident was the lowness of the off rail of the down branch line, in the immediate neighburhood of the facing-points, which lowness made it comparatively easy for the left wheels of any vehicle when entering the branch curve to mount that rail. The rail is acknowledged by the ganger to have been at the time of the accident $1\frac{1}{2}$ inches lower than the near rail ; this would have been right enough had the main line curve only to be considered, but in consequence of the branch line curving in the contrary direction, both lines should have been kept on the same level until it was possible to give the outer rail of each line its proper cant.

There is no reason in this case to suspect that the signalman had attempted to move the facing-points while the train was passing over them. Nevertheless, it is very desirable that they should be supplied with a locking-bar to make such a thing possible.

Neither is there any reason to attribute the accident to undue speed or defect in the rolling stock.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Major-Gen. R.E.

Printed copies of the above report were sent to the Company on the 19th April.

NORTH BRITISH RAILWAY.

Board of Trade,
(Railway Department,)
2nd April 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in your Minute of the 27th ultimo, the result of my inquiry into the circumstances connected with the collision which occurred on the 27th February (though not reported to the Board of Trade until the 22nd ult.) at Queen Street station, Glasgow, on the North British Railway.

In this case the 9.10 p.m. passenger train from Edinburgh to Glasgow was allowed by the breaksmen attached to it to enter Queen Street station at too high a speed, and thus to come into collision with two break-vehicles which were standing against the buffer-stops at the end of the station.

Three passengers were injured, but not seriously. Two carriage-buffers were broken, the framing of one of the breaks was damaged, and the buffer-stops were knocked backwards a short distance.

From Cowlairs station to Queen Street station, a distance of about $1\frac{1}{2}$ miles, the line is first level for about 200 yards, next falls on a gradient of 1 in 45 for $1\frac{1}{4}$ miles (which is mostly in tunnel), then rises slightly for 200 yards, after which there is 50 yards of level to the buffer-stops. Trains are pulled up the gradient of 1 in 45 by means of a stationary engine and rope. In descending, their engines push them from Cowlairs to the head of the bank, down which they are worked by means of heavy tunnel breaks, two of which, each in charge of an experienced breaksman, are attached to the head of each train.

Rule 539 enjoins that the speed down the tunnel is not to exceed 10 miles an hour, but also states that five minutes are allowed for running from Cowlairs to Queen Street, a distance of about $1\frac{1}{2}$ miles. The two clauses of the rule are thus inconsistent with each other, as the time allowed would make the speed 18 miles an hour instead of 10 miles.

The following is the evidence :—

1. *Hugh Hay*, guard 17 years.—I was in charge of the Glasgow portion of the 9.10 p.m. train from Edinburgh, which started 24 minutes late, waiting for a train from the south. On leaving Polmont the train consisted of engine, tender, seven carriages and a van behind, in which I was travelling alone. There

were no breaks except those on the van. We next stopped at Cowlairs at 10.43, and left at 10.47, 32 minutes late, having lost eight minutes in running. At Cowlairs the engine left the train, and after attaching two tunnel-breaks to the front of it, went behind the train and pushed it to the bankhead, a distance of about 200 yards. The engine there left the train. We were not detained at the bankhead, but started down at once. I saw the breaksmen in each of their breaks before we started, but I had no communication with them. The night was fine. The van's breaks are not used in going down unless the breaksmen or bankheadsman asks us to apply them in consequence of the train being unusually heavy, and this was not the case with the train in question. There was nothing unusual about the speed until we came near to the Glasgow end of the tunnel; but then observing that it was higher than it ought to be, I applied my break. We pulled up considerably along the level portion, but, nevertheless, struck the buffer-stops at a speed of about four miles an hour. I think the speed at the Glasgow end of the tunnel mouth must have been 20 to 25 miles an hour; it had increased at that point from what it had been previously in the tunnel. Rule 539 states that the speed down the tunnel should not exceed 10 miles an hour, five minutes being allowed for passing from Cowlairs to Queen Street. I saw the breaksmen after we had stopped; they said they could not help what had happened; that they had miscalculated their speed. I observed nothing wrong about them, nor that they smelt of liquor, though I was speaking to them. I never before ran too fast into the buffer-stops, though I have worked trains into Glasgow all the time I have been guard. The collision occurred at 10.53, the train having been due at 10.25, making it 28 minutes late, four minutes having been gained between Cowlairs and Queen Street.

2. *John Gray.*—I have acted as breaksman for 9 or 10 years on the Cowlairs incline, having been porter in Queen Street for about eight years previously. I came on duty at 5.30 p.m. on the 27th February for the night-shift till 5 a.m. next morning. I had been working trains from 5.30 p.m. up till the time I was attached to the 9.10 p.m. train from Edinburgh, at about ¼ to 11 p.m. I had left the station once at about 8 o'clock, and went into Queen Street to get some bread and cheese, and had some whiskey (only a glass), having had nothing before since about 2 o'clock or 3 o'clock, when I had had my dinner. I was on the front break when attached to the 9.10 p.m. train, and John Dickie was on the second one. There was no one else on either break. I had seen the bankheadsman (Martin) not long before. Nothing occurred before we started. We were coming down at the usual speed as far as the centre shaft (of which there are three), and there the train slipped away from us, and we could not recover this till we reached the bottom of the bank, where the speed was quicker than usual. The sand in the boxes was frozen, so that I could hardly break it. The breaksmen are responsible for the state of the sand, which we get wet. We put our breaks hard on from where the train slipped, and we kept them hard on to the bottom. I remained in my break till I struck the breaks standing next the buffer-stops at a slow speed. I was not knocked down. My break did not leave the rails, nor was it injured.

3. *John Dickie.*—I was goods guard at the time of the collision, but in consequence of the illness of one of the regular breaksmen, I took his duty at 6 p.m. on the 27th for the night. I had acted as breaksman on the bank previously, perhaps 20 times. I had no hesitation in undertaking the duty. I was once away from the Company's premises between 6 and 10.45, viz., between seven and eight o'clock, when I went out alone and had a pint bottle of bitter ale, but nothing to eat. I was working regularly with Gray all the evening. I was alone in the second break when I was attached to the 9.10 train; I coupled it on to the train. The bankheadsman was near the spot. Nothing occurred before we left the bankhead. I think we came down rather sharp the first part of the incline,—faster than 10 miles an hour, but not quicker than usual. We then came on steadily till the second shaft, where I released my break, but applied it again on finding the speed increasing; but I was not aware, till reaching the bottom of the bank, that the speed was faster than it ought to have been. I never released my break again till we struck the two break vans at a speed of about three or four miles an hour. I did not jump off, nor was I knocked down; the first carriage mounted the break-buffers and injured the frame-work. I never ran into these buffers before. I had some sand in my box, which I used. It was a little frozen.

4. *Alexander Martin.*—I have been bankheadsman 11 years. My duty is to see that proper breaks are put on in front of the trains and that the breaksmen are fit for their duty, &c. I was on duty when the 9.10 p.m. train from Edinburgh started from the bankhead on the evening of the 27th inst. I had seen Gray and Dickie before they started down. They were both of them quite fit for their duty. I saw no sign of drink about them. I saw them also about 12 o'clock, after the accident, and I then saw nothing wrong about them, but allowed them to go on with their work. I never remember Gray making any mistake before. Dickie had often acted as breaksman before. I am not sure of the weight of the breaks in question, but they vary between 11 and 13 tons. I consider there was ample break-power on the train. The mistake ought not to have happened except by neglect. Gray was responsible for the speed of the train. Gray made no complaint to me about Dickie not having done his duty. I have never heard any complaint about the sand; it is the same sand and same sand-pipes we have had for the last 20 years.

5. *Mr. Pott*, station-master at Cowlairs.—There has never been any complaint about the sand for the breaks. It is purposely kept a little damp, and used through large pipes to ensure it clinging better to the rails. On the evening in question, I am quite sure there was not enough frost to have frozen it. I did not see Gray or Dickie before they went down the bank, nor afterwards, till next morning, when I suspended them both. They had taken down a train the same evening, twice the weight of the one which met with the accident, with the same breaks. They complained of the rails being greasy and the breaks not working. It was actually a very dry night.

6. *James Somerville*, acting assistant station-master at Queen Street station.—I was on duty on the 27th February when the 9.10 p.m. train from Edinburgh came in. I was at the Cowlairs side of the arrival platform when it passed me at about 10 miles an hour. The breaksmen were trying to stop it. I called to the guard to apply his break, as his wheels were not skidding. I think it must have struck the two breaks standing against the buffer-stops at a speed of three or four miles an hour. I at once saw the breaksmen, and had no suspicion that they had been drinking. They seemed to be quite up to their duty. They complained of greasy rails as having been the reason of their running in too fast. It was against orders for these men to have left the Company's premises or to have entered the Company's refreshment rooms.

This collision was caused by the breaksmen in charge of the train allowing it to attain too great a velocity in descending the steep incline leading to Queen Street station. There is no evidence to show that these men were under the influence of liquor, but by their own acknowledgment they had committed the grave offence of leaving the company's premises

for the purpose of going to a public-house while engaged in a most important duty. They have both been dismissed from the Company's service, it being rightly considered that the offence of obtaining drink, when employed in such responsible positions, required to be most severely dealt with.

The discrepancy in Rule 539 should be corrected, so that the speed and the time may not disagree with each other.

I have, &c.,
C. S. Hutchinson,
Major-General, R.E.

The Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Company on the 19th April.

NORTH-EASTERN RAILWAY.

Board of Trade,
(Railway Department,)
17th January 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the order of the 8th instant, the result of my inquiry into the collision which occurred on the 2nd instant, at Guisbro' junction, Middlesbro', on the North-eastern Railway.

In this case, the 8.30 a.m. passenger train from Ingleby to Newcastle, viâ Middlesbro', due at Middlesbro' at 9 a.m., was run into by the 8.30 a.m. passenger train from Saltburn to Darlington, due at Middlesbro' at 9.1 a.m.

Six passengers, all travelling in one of the carriages of the Ingleby train (which carriage was upset), are stated to have been slightly injured.

In the Ingleby train three vehicles were damaged in their foot-boards and side lights; one of these was thrown over on its right side, and the other two left the rails.

In the Saltburn train the engine had its buffer beam broken.

At Guisbro' junction, a short distance east of the Middlesbro' station platform, the branch line from Guisbro' joins the main line from Saltburn to Darlington.

The up home signals are placed on separate posts 12 yards apart, and about 50 yards outside the fouling point. The Saltburn and Guisbro' up distant signals are respectively 625 yards and 750 yards from the up home signals. These signals are all good ones, and with ordinary care the home signals cannot well be mistaken one for the other.

Both up lines approach the junction on rising gradients of about 1 in 260.

On the Saltburn line block telegraph working is in force up to the junction, Whitehouse crossing, 1,130 yards distant, being the first block station east of the junction. On the Guisbro' line the first cabin east of the junction is at North Ormsby, 580 yards distant, but block telegraph working is not in operation between the junction and North Ormsby (the approach of the trains being only announced by bell), as in consequence of the constant passage of engines to and from the sheds, which obliges them to cross the branch lines, it is said to be impossible to employ it.

The collision occurred at about 9.5 a.m., at a point 82 yards inside the Saltburn up home-signal.

The following is the evidence:—

1. *William Mussett*, signalman eight years, six years at Guisbro' junction: "I came on duty at 6 a.m. on "the 2nd, for eight hours. I and a block telegraph "boy were alone in the cabin when the collision hap- "pened. The Ingleby train was given on to me by bell "signal from Nunthorpe (4 miles 23 chains distant), "at 8.55 a.m. I lowered my signals for it at once. "The through bell from Eston had gone wrong in "the night, but I took the train from Saltburn 'on "line' from Whitehouse crossing at 9.2 a.m. I stood "watching the trains approaching the junction, and I "thought at first that the Saltburn train would stop "at the home-signal, and I did not notice that there "would be a collision until it was too late to do any- "thing. I am not aware of any rule requiring me to "keep all signals at danger against two trains ap- "proaching a junction simultaneously. The Ingleby "train was running faster than the Saltburn train; "the driver of the latter I thought was trying to stop. "There has never been block working between my "cabin and North Ormsby; and I do not think it "could be introduced without interfering greatly "with the traffic on account of the frequent crossings "from the engine sheds. The collision occurred "at 9.5."

2. *James Murray*, driver 23 years, well acquainted with the lines about Middlesbro': "I was driving the "8.30 a.m. train from Saltburn for Darlington on the "2nd. My engine was a six-wheeled one, the "driving and trailing wheels coupled with a break "block on each trailing wheel; the tender was six- "wheeled, with a block on each wheel. There were "15 vehicles on the train, of which five had breaks. I "started from Saltburn at right time, and met with "no particular delay on the road. I last stopped "before the collision at Eston. The signals at "Whitehouse (distant, home, and advance,) were "all off as I approached them, but the Guisbro' "junction distant-signal was on as I passed it at a "speed of 14 or 15 miles an hour. I had shut off "steam and had the tender break applied on account "of this signal being on. I was then quite prepared "to stop short of the junction, but on coming in full "sight of the junction home signals I saw the "Guisbro' branch home-signal off, and mistook it for "my own signal; there was no other reason for my "doing this but from smoke and steam hanging about "the home signals. I think both signals would be "better for being heightened. I fancied at the time "that the home-signal had been dropped after I had "passed, or as I was passing, the distant-signal. I "did not find out my mistake till close on the home "signals, when, hearing the other train, I looked up "and saw the Guisbro' signal off. I had put on a "little steam after thinking I had the signal, and was "running perhaps at 12 miles an hour at the home- "signal. I had time to shut off steam, reverse the "engine, get steam against it, and to apply the engine "break, and my mate to apply his tender break, "before we struck at a speed of three or four miles "an hour. We neither of us jumped. We struck "the second carriage from the back of the Ingleby "train. The leading wheels of my engine left the "rails. I did not whistle for the guards breaks, and "I don't know whether they were applied."

3. *William Pybus*, fireman two years six months with Murray: "All the signals at Whitehouse crossing "were off as we approached them, but I saw that the "junction distant-signal was on when passing White- "house cabin. In consequence, steam was shut off "and my break applied; about 10 or 20 yards past "the distant-signal I saw what I thought was our "junction home-signal off, Murray seeing it at the "same time, as I know, for he told me to take off the "break. The speed was then somewhat increased, "and we neither of us discovered we were wrong till "about 30 yards from the home-signal, when we saw "that we had made a mistake, and we then used every "means to stop, our speed on striking the other train "being almost nothing. We neither of us jumped off, "nor were we hurt. There was no particular reason "for a mistake being made on this occasion."

4. *Thomas Layton*, guard about three years: "I "was in charge of the Saltburn train, which consisted "of 14 vehicles, including three vans (and three "guards); two of these vans were coupled with New- "hall's breaks each to one carriage. I was in the front "van next the tender. We left Saltburn punctually at "8.30 a.m., and left Eston (the last stopping place), "at 8.55, also right time. On approaching Guisbro' "junction I observed that the distant-signal was "against us, and our speed was reduced to about four "or five miles an hour half-way between the distant- "signal and home-signal; the steam was here put on, "though I saw that the home-signal was at danger. I "did not notice the Guisbro' home-signal. I at first "thought that the driver was putting on steam only to "draw up to the home-signal, and it was not till he was "passing it that I saw he was not going to stop at it. "When the driver shut off steam, about 100 yards from "the home-signal, the speed being from 8 to 10 miles "an hour, I applied my break. We were almost "stopped when we struck the other train. My van "did not come into collision at all. No one was hurt "in my train. I never thought myself that the driver "had mistaken one home-signal for the other. I did "not notice that our home-signal was at danger until "within 100 yards of it, on account of my engine's "steam, and then I put my break on."

5. *Ralph Bainbridge*, guard four years: "I was in "the middle of the train in a van coupled to one "carriage with a continuous break. On approaching "Guisbro' junction I noticed that the distant signal "was at danger as I passed Whitehouse crossing. I "applied my break, and never took it off further than "to allow the wheels just to revolve till we struck. "Just after passing the distant-signal (when our speed "was 15 or 20 miles an hour), I noticed that the home- "signal was on, but the Guisbro' home-signal was off. "When near the home-signal I felt the speed increasing "and accordingly applied my break as hard as I could, "seeing that the driver would overrun the home- "signal, and the train was just stopped as the collision "occurred. I heard no whistle from either engine. "I made the time of the collision about 9.3."

6. *William Winward*, driver 21 years: "I started "from Ingleby junction on the 2nd instant with a "train consisting of engine, tender, and nine vehicles, "including two vans and two guards. My engine was "a bogie tank, running coal-box first, with eight "wheels in all, four of them coupled. We left punc- "tually at 8.30 a.m. We were stopped by block "signals at Nunthorpe station about three minutes. "As we approached the Guisbro' junction signals "I found them off for me. I saw that the home- "signal was off from North Ormsby crossing. I "saw nothing of the Saltburn train, and only knew "it was there on feeling the front van break away "from my engine when the collision occurred. My "speed at the time was about 10 miles an hour. "The last vehicle but two was struck and fell over "on its right side. I know the home signals well, and "think it would be an improvement if they were raised, "as it would take them out of the steam more."

7. *John Dobson*, four years fireman, 12 months with Winward, agrees with the former witness.

8. *Robert Wilkinson*, guard 13 years: "I left "Ingleby at 8.30 a.m. on the 2nd with a train consist- "ing of nine vehicles, including three vans with two "guards. I was in the last van. We were detained "by signal three minutes at Nunthorpe. The Guisbro' "junction signals were off as we approached them. I "saw the Saltburn train approaching the junction, and "at first thought it was going to stop, but from about "the home-signal saw that it would strike my train, "and prepared myself for the collision. The engine "first struck the last vehicle but two, a third-class "carriage, and it fell over on its right side; the last "carriage but one was off the rails, not touched. My "van was also off the rails, and the foot-board was "stripped. I was a little shaken. The whole train, "except the engine which broke away, stopped at "once. None of the couplings broke. The collision "occurred at 9.3."

The collision in this case was caused by an experienced driver of 23 years service, well acquainted with the line on which he was running, mistaking the Guisbro' junction up home-signal, which was off for the train from Guisbro', for the Saltburn up home-signal, applying to the line on which he was approaching the junction and which was at danger. These signals are perfectly distinct, being placed on separate posts 12 yards apart, and it is difficult to understand how one could be mistaken for the other. They are by no means low signals, and if raised, as suggested in the evidence of the drivers, they would be more difficult to see in hazy weather, though they might be less likely to be obscured by the steam from passing engines.

If this junction had been worked on the system of not allowing two trains which can come into collision, to approach a junction simultaneously, a system now in force (where block working is in operation), on all parts of the North-eastern Railway except the Darlington section, this collision would have been prevented. To put this in force it would, of course, be necessary to introduce block working between Guisbro' junction and North Ormsby cabin, a distance short of 600 yards. If this is, as stated, really impracticable under existing arrangements, it only shows that some improvements are wanted, and these should be made without unnecessary delay.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Major-Gen. R.E.

Printed copies of the above report were sent to the Company on the 13th February 1877.

NORTH-EASTERN RAILWAY.

Board of Trade,
(Railway Department),
10th February 1877.

Sir,

I have the honour to report, for the information of the Board of Trade, in compliance with the instructions contained in the Order of the 29th ultimo, the result of my inquiry into the accident which occurred on the 26th ultimo, at East Boldon junction, on the Newcastle and Monkwearmouth branch of the North-Eastern Railway.

In this case, as the 2.25 p.m. passenger train from Monkwearmouth to Newcastle was passing East Boldon junction, the engine, the van next to it, a third-class carriage next to the van, and the leading wheels of a first-class carriage next in order left the rails; the trailing wheels of the latter carriage and those of the five other vehicles composing the train remaining on the rails.

Complaints of injury have been received from three passengers, but in no case are the injuries believed to be of a serious nature.

The engine (a tank engine with a four-wheeled trailing bogie, running chimney first,) had its two leading springs and its left leading and right trailing bogie springs broken. The leading break-van (which had happily been substituted for a break carriage a short time previously) was completely broken to pieces, by coming into contact with a signal post; the third-class carriage next the van had its side and end panels broken, and its steps and step irons stripped off; the first-class carriage next the van had its buffers and steps broken.

Three rails on the main line and ten on the branch were broken, and also some chairs and crossings.

At East Boldon, situated about one mile on the Monkwearmouth side of Brockly Whins station, and

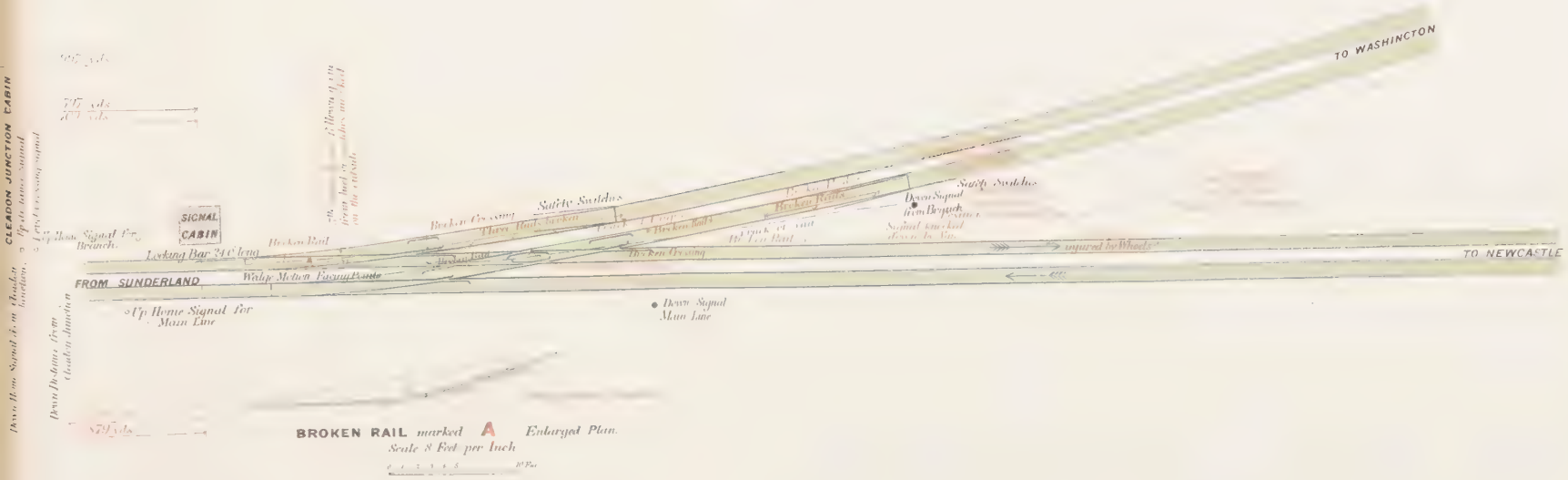
To accompany Major General Hutchinsons Report of the 10th February 1877

North Eastern Railway

Newcastle & Sunderland Branch

Boldon Junction

Scale 10 Feet to an Inch.


TO WASHINGTON
TO NEWCASTLE
FROM SUNDERLAND
SIGNAL CABIN
Up Home Signal for Branch.
Locking Bar 24 C long
Broken Rail
Wedge Movem Facing Points
Up Home Signal for Main Line
Down Signal from Branch
Down Signal Main Line
Broken Crossing
Sliding Saddles
Broken Rails
Down Signal from Branch
Switch Switches
Signal cracked about 1/2 in.
injured by Wheels
Broken Crossing
Broken Rail
Broken Rail
Broken Rail

three quarters of a mile on the Newcastle side of Claydon Lane station, a mineral line to Washington forms a double junction with the main line between Newcastle and Monkwearmouth, the facing points being on the up line from Monkwearmouth to Newcastle. The signal cabin is on the up side of the line, and has its centre about five yards on the Monkwearmouth side of the facing points. The main line up home signal is on the down side of the line and 12 yards from the facing points, and the up distant signal about 600 yards from the home signal. The points and signals are properly interlocked, and the facing points are provided with a locking bar 24 feet long (for preventing the points being moved while a train is passing over them), and with wedges to ensure one tongue or the other being properly closed; the points, locking bar (which moves horizontally), and wedges being all worked by the same lever. The main line is perfectly straight for some distance on each side of the junction, and rises very slightly towards Newcastle.

The following is the evidence bearing on the accident:—

1. *Thomas Rutherford*, driver four years. "I was "in charge of the 2.25 p.m. train from Monkwear- "mouth on the 26th. My engine was No. 954, an "eight-wheeled tank engine with a trailing bogie, "running engine first. We had stopped before the "accident at Claydon Lane station, and left it about "a minute late. On coming in sight of the East "Boldon junction distant signal, just on leaving "Claydon Lane, I saw it, quite distinctly, off. Di- "rectly after passing Claydon junction (about half a "mile from Claydon Lane) I saw the junction main "line home signal also off; that is the signal on the "right-hand post. It was right off. I kept it in "view, and it remained down till after the accident, "as I saw on turning round to look at it. My "speed at the junction was from 25 to 30 miles an "hour. I was not looking at the facing points as I "approached them. I first felt the front end of the "engine drop, and it then ran along the sleepers. I do "not think we ran on the branch at all, but that the "wheels got astride of the points. All I did was to "shut off steam and reverse the engine. The engine "and van kept together for some time, and then "the van broke away from the engine. The engine "stopped with its off wheels in the 4-ft. space of the "branch down line, about 90 yards from the facing "points. Neither I nor the fireman sustained any "injury. I went back to the junction almost imme- "diately. I had seen no one meddle with the points. "The left-hand tongue, which ought to have been "close, was standing a little open, not quite half an "inch. I saw no mark at the end of this tongue, "but further along it there were marks as if a "wheel had been scrubbing against it. The wedges "were not quite home. The right tongue seemed "well open. I saw some wheel marks between the "branch and main line rails on the right where the "broken rail was. It seemed to have been broken "by a blow from the direction of the branch. The "locking bar appeared to be all right as far as I "could see. I did not speak to the signalman. The "engine had not been oscillating before we reached "the junction. It runs steadier engine first (as we "were running) than bogie first. The tank would "be half full and the boiler three quarters full, and "we had about 30 cwt. of coal. The tank when full "holds four tons of water. I never knew anything "go wrong at these points before, though I have been "running between Monkwearmouth and Newcastle "constantly for the last two years. Four springs of "the engine were broken, the two leading springs "and the left leading and right trailing bogie springs; "one plate in each of the latter were broken with "fresh breaks. I don't know what was broken in "the other springs. I am not aware of anything "having been wrong with the engine before the "accident. I had looked round it at Monkwear- "mouth before starting."

2. *John Booth*, fireman three years. "On leaving "Claydon Lane station I saw the East Boldon junc- "tion distant signal off; and it was off when we "passed it. I saw the right-hand home signal also "off when I first noticed it, soon after seeing the "distant signal. This home signal remained off till "we were close to it, but I did not see it afterwards, "and I don't know when it was put to danger. Our "speed at the junction was from 25 to 30 miles an "hour. I was on the left of the engine. I did not "notice how the facing points were lying. The "engine left the rails at the points, the front wheels "appearing to drop, and the bogie wheels to rise. "I felt no blow. I put my break on, and got it hard "on before the engine stopped. The van broke "away from us at the signal post. I was not hurt. "I went back about ten minutes afterwards to look "at the points. The left tongue was standing a "little open, perhaps half or five eighths of an inch. "The wedges were in, but not quite home. I did "not notice the right tongue. I cannot account for "the engine leaving the rails. It had been running "steady before the accident. It is a steady engine, "and runs equally well either way."

3. *Richard Mitcheson*, guard five years. "I was "in charge of the 2.25 p.m. train from Monkwear- "mouth to Newcastle. It consisted of eight vehicles "in all, viz., a dummy van, one third, two first, two "second, one third class, and a break carriage, in the "last compartment of which I was riding. There "were no continuous breaks in the train. We left "Monkwearmouth at right time, and also Claydon "Lane station. I saw the East Boldon distant signal "from Claydon junction, and it was off, and remained "off till I passed it. I saw the right-hand home "signal as we were passing the distant signal. It "was also off, and remained off till my van had passed "it, and was not put to danger till after we had come "to a stand. Our speed at the junction was about "25 miles an hour. A jolt in the van was the first "thing that drew my attention. I then saw the "engine jumping and taking the wrong road. I got "my break on a little, and we stopped with my van "just about the crossing of the branch down line "(*i.e.*, about 35 yards from the facing points). My "van, the third, two second, and one first class carriage "in front of it, were all on the main line rails coupled "together, the front wheels of the next first class "were off the rails to the left and coupled; the third- "class carriage was off the rails to the left, and the "front van was smashed to pieces. I looked at the "points after the accident, and saw that the left tongue "was not quite closed, and the wedge not quite home. "The accident occurred at 2.38. I was not hurt.

4. *Hugh Hall*, signalman between 14 or 15 months, nearly all the time at East Boldon junction. "I came "on duty at 6.30 a.m. for 12 hours. Allen Bradman, "learner, was in the cabin at the time, no one else. "The last train that had passed the junction in either "direction was an up branch train at 2.15 p.m. About "two minutes after this I made the road right for "the main line, not experiencing any difficulty in "putting back the facing-point lever into its normal "position. I pushed it over, and then pulled it back, "and then again over sharp, finding that the wedges "worked better when I did so; they would remain "perhaps one and a half inches out if I moved the "points slowly. I saw that the points were appa- "rently right, and lowered first my distant signal "and then my home signal for the up train at about "2.34 p.m., on receiving it 'On line' from Claydon "junction. I put back my distant signal just after "the train had passed it, but not my home signal "till the train had stopped. The train was running "about the usual speed. I was standing near the "lever and did not see the train leave the rails, but "felt a sort of jump. I did not leave the cabin, but "looked at the points out of the window. I saw that "the wedges were not close up within one and a half

" inches, and that the crank (nearest Claydon junction) " of the locking bar was broken. Nothing else was " wrong with it. I could not see that the left tongue " of the point was not close. I could work the lever " after the accident, but I cannot say whether the " points closed properly. Sometime before the acci- " dent the wedges had not been acting quite properly. " I had not reported them. They work closer now. " I have not known the bar struck before. The " accident occurred at 2.36."

5. *Allen Bradman*, training for signalman for 6 weeks. " I was in the East Boldon cabin at the time of " the accident, learning the duties of signalman. I " entered the hours of the trains in the register. I " remember Hall altering the facing points soon after " the up branch train had passed. He gave the lever " a double stroke which is according to rule in order " to assure the points working properly. I did not " see the points myself, but I saw Hall look at them. " They were not complained about by Hall, nor did " I hear him say the wedges were not working pro- " perly. I remember Hall taking the signals off after " getting ' Line clear ' from Pontop crossing; first the " distant and then the home signal. He put the dis- " tant signal on after the train had passed it, and the " home signal after the train had left the rails. There " was nothing unusual in the speed of the train. I " was giving the bell signal to Pontop crossing when " the accident occurred. I did not look at the points " on the ground, but saw from the window that the " locking bar was closer to the rail than it ought to " be. The left tongue did not appear open."

6. *Stephen Corner*, platelayer for the last 40 years. " I got to the junction immediately after the accident, " and before any other workmen, having seen it " happen from about half a mile off on the Claydon " Lane side of the junction. I found the locking bar " close to the rail, only about an inch off. The first " chair next Claydon Lane was broken. The wedges " were about an inch and a half from being full home, " and the left tongue of the point nearly half an inch " open, and it was bent by having been forced inward. " I don't think anything was wrong with the right " tongue. The connecting rods were bent. I had " not known these wedges not act properly before."

7. *Robert Tindle*, platelayer about seven years. " I " had examined the East Boldon junction points the " morning of the accident. I had oiled them and " seen them move. The wedges then worked " properly. I did not see them after the accident."

8. *Mr. Simkins*, permanent-way inspector. " I " reached East Boldon junction about 5 p.m. I found " the locking bar taken off, but the wedges were on. " I tried the working of the points and found that " when worked very slowly they would not close by " three-eighths of an inch, and that the wedges would " enter the points only an inch instead of seven inches, " in which case the locking bar would be close to the " stock rail instead of being two and three-quarter " inches away from it. I afterwards asked the " signalman to work them in his usual manner, " when the wedges remained out about an inch, and " the locking bar was nearly in its proper posi- " tion. On examination afterwards by signal inspec- " tor Kelly, it was found that the vertical connection " between the lever and the first crank (an iron bar " seven feet long and one inch in diameter) was " somewhat bent. This has been since rectified. The only thing broken about the locking bar was " the lug connecting it with the first chair next " Claydon Lane station."

From the foregoing evidence it appears that as the 2.25 p.m. passenger train from Monkwearmouth to Newcastle, consisting of a tank engine and eight vehicles, was passing East Boldon junction, where the proper signals were lowered for it, at a speed of from 25 to 30 miles an hour, the engine left the rails at the facing points, dragging after it the two next vehicles; the remainder of the train, with the exception of the leading wheels (of what had been) the third vehicle, remaining on the rails of the line on which the whole of the train ought to have travelled. The left wheels of the engine (the probable track of which is marked upon the accompanying diagram) seem to have inserted themselves between the left tongue of the facing points and the stock rail, the outside of the fifth, sixth, and seventh chairs from the point heel on the left rail of the up main line being chipped; the right wheels of the engine which had kept to the right-hand side of the right-hand tongue then probably broke the rail A in trying to cross it; after this the engine gradually crossed from the up to the down branch line and came to rest in the position shown, near the down branch signal post with which the van came into collision, and was completely broken up; the third class carriage next it happily clearing the van and coming to rest about 30 yards further on.

The reason why the left wheels of the engine were able to take the wrong side of the left tongue of the facing points must, I think, be attributed to the fact that the vertical rod connecting the facing point lever in the cabin with the crank below had from some unexplained cause become bent, and that, therefore, unless great care was exercised, the points would not close properly, nor the wedges travel home, nor the locking bar attain its proper distance from the rail. Thus the engine, travelling on a straight road and probably therefore wriggling in its course, struck the locking bar (breaking, as it did so, its connection with the first chair) with its left leading wheel; this wheel was probably forced a little upwards by the want of space between the locking bar and the rail, and in this elevated position was more ready to enter the opening (amounting to perhaps half an inch) between the left tongue of the facing point and the stock rail.

The signalman who states that he was aware that the points were not in thorough working order is, I think, to blame for not having reported the circumstance, and should not have allowed trains to pass over them at full speed while they were in this condition.

It is not, as a rule, desirable to work points, locking bar, and wedges all with the same lever; at any rate, where this is done, the connecting rods should be made stronger than usual; and for those parts which are liable to buckle, a section + of this form would appear to be desirable.

The engine in the present case was in good working order. It was two years old, and its wheels had been recently turned up. Its distributed weights, viz., 12·75 tons on the leading wheels, 13·4 tons on the driving wheels, and 20 tons on the four trailing bogie wheels tend, however, to make it light in front, and its leading wheels consequently more ready to mount than if the weights were more evenly distributed.

I have, &c.,

The Secretary,
(Railway Department,)
Board of Trade.

C. S. Hutchinson,
Major-General, R.E.

Printed copies of the above report were sent to the Company on the 31st March.

NORTH-EASTERN RAILWAY.

Sir, *Morpeth, 27th March* 1877.

In compliance with the instructions contained in the Order of yesterday's date, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident which occurred on the 25th instant, near the Morpeth station on the North-eastern Railway, to the up-express passenger-train timed to leave Edinburgh at 10.30 p.m. for King's Cross.

This train was travelling on a rising gradient of 1 in 286, and round a curve of 17½ chains radius, at a speed of perhaps 25 miles an hour, when the engine suddenly left the rails on the outside of the curve. After running forward for a distance of 84 yards, it came to rest on its off-side, partly across the line of the Wansbeck Valley Railway, and partly on the down line of the North-eastern Railway, which is within eight feet of it at that point, nearly at right angles to the direction in which it had been travelling, with its funnel eastward. The off leading spring was broken off at the links, and the off driving spring was destroyed, and its plates have not been found. The coupling-rod was bent from the fall, and a rail had been driven through the end of the smoke-box, and was still in the engine with three chairs attached to it. The tender was behind it, on its wheels. A fish-truck and a break-van which had been behind the tender ran clear of it to the left, and fouled some trucks standing in a siding on the up side. The passenger-carriage which had been the third vehicle in the train, dashed into the tender, lodged its leading wheels in the tank, and was completely destroyed, and one of its passengers was found dead in the tank of the tender, whilst another was jammed against the end of the tender. Some of the intermediate carriages could hardly be distinguished, but the last van in the train, which was the only vehicle that remained on the rails, stood close to the first point of disturbance.

Five passengers, of whom one was a guard travelling as a passenger, were killed, and 17 passengers have complained of injury. The engine-driver, fireman, and guard of the train were also injured.

I enclose a plan of the line, diagram No. 1, on which is shown the position of the engine and carriages after the accident; and a drawing of the engine, diagram No. 2, with which the Company have been good enough to furnish me.

Permanent Way.

The Morpeth station is 16½ miles on the north of Newcastle. The up platform is 130 yards long, and is on a curve of 17½ chains radius. Near the north end of this platform are a pair of facing-points connecting the Wansbeck Valley branch of the North British Railway with the main up-line of the North-eastern Company. The two lines run parallel to one another, the rails being within a few inches of each other, until they reach the south end of the up platform, when they diverge, without any points, until the near rail of the Wansbeck Valley line crosses the off rail of the North-eastern line 30 yards from the south end of the up platform, opposite to a water-crane on the east of the line. North of this water-crane is a cabin used by the goods-inspector, and on the south of it is an iron water-tank supported by brickwork, all on the east of the main line. It was immediately opposite to this water-tank, and 38 yards south of the south end of the up platform, that the first marks of anything wrong were found in the permanent way.

The permanent way on this part of the line is laid with double-headed steel rails, weighing 80 lbs. to the lineal yard, and fished at the joints with fish-plates and four screw-bolts in the usual manner. The chairs are of cast-iron, the ordinary chairs weighing 40 lbs. each, and those to which tie-rods are fastened 50 lbs. each. They are bored with four holes, two wrought-iron spikes being inserted in each chair. The sleepers are partly 9 feet by 10 inches by 5 inches, and partly 12 feet by 12 inches by 6 inches. There are three tie-rods in each 24 feet rail connecting the heavier chairs together. The ballast is of cinder ash. The gradient is 1 in 286 rising towards Newcastle, and the curve has a radius of 17½ chains. The gauge between the rails I found to be about ¼-inch tight, and the super-elevation of the outer rail of the curve was about 1¼ in. at the joint where there was the first mark and north of it.

The Engine.

The engine, No. 901, is an express-passenger-engine, with leading-wheels 4 ft. 6 in. in diameter, and driving and trailing wheels, coupled together, 7 feet in diameter. The cylinders are 17 inches in diameter, with a stroke of 24 inches. The weights are distributed as follows:— On the leading wheels 12 tons 10 cwt., on the driving wheels 14 tons 13 cwt., on the trailing wheels 12 tons 13 cwt., and the length of the wheel base is 16′ 1″. The engine was built in 1872 at the Gateshead Works, and is stated to have been a very steady running engine. It was last in the workshops for repairs in January of this year, when the tyres were turned up for the first time, after they had been running for 12 months.

Evidence.

Philip James was the conductor of the train which met with the accident. It left Edinburgh at 10.45 on Saturday night, 15 minutes late, through having to wait for the Glasgow train, and reached Berwick at 12.24, being then 24 minutes late. On getting out of his van a minute or two after the accident he found it was 1.42 a.m. They were 22 or 23 minutes late at Morpeth. The train was composed of an engine and tender, an East Coast break-van, a fish-truck from the Highland Railway, a composite carriage from Edinburgh, third-class carriage from Edinburgh, composite carriage from Edinburgh, third-class carriage with break from Edinburgh, large East-Coast van from Aberdeen, composite carriage from Aberdeen, composite carriage from Perth, sleeping-carriage from Glasgow, composite carriage from Glasgow, third-class carriage from Glasgow, and the Glasgow van, forming a train of thirteen vehicles. He was riding in the rear van. It is the usual practice to shut off steam and reduce speed to run through Morpeth station. He heard no whistle. The speed had been reduced at the time of the accident, and he thinks they passed through Morpeth station at 20 or 30 miles an hour, which was not faster than usual. The ordinary rate of running from Berwick would be about 30 or 40 miles an hour. The distance from Berwick to Newcastle is 66½ miles, and they are allowed 1 hour and 40 minutes to do it, without a stoppage. The first intimation he had of anything wrong was receiving a shock in his van which threw him down. As soon as possible he got out of his van and went and told the signalman to block both lines, who said he had already done so. He found that his van was the only vehicle left on the rails. He did not notice any joint of the rails that had been disturbed.

Thomas Wylie was the fireman of the engine which left the rails. He has been a fireman four years. Steam was shut off at the usual place when coming through the bridge about a mile north of Morpeth station, and the steam was not put on again before

the accident. No breaks were put on. He believed there was a rule to slacken speed in going through Morpeth, at any rate it was always their practice. The signals were right for them to pass through Morpeth station, which they did at a speed of 20 or 30 miles an hour. He felt nothing wrong until he was thrown below the tender. He has been running for two years with the same engine and the same driver. He never had occasion to complain of any fault in the engine. The driver examined the engine at Edinburgh and Berwick. He did not know that there was any difficulty in keeping time with this train. They were just about the same time late at Morpeth as on leaving Edinburgh. If late on leaving Edinburgh they are not bound to make up that time. He did not examine the permanent-way after the accident. It was a misty morning.

Patrick Murphy has been a porter at Morpeth station for 3½ years. As the train passed the station he was standing in front of the office with his lamp in his hand. There was a heavy mist. He could not tell whether steam was shut off. He would not say the train was going faster than usual that morning. The train had hardly got out of the station when he thought he heard a shout, and on coming out of the office he met the conductor who told him the express was off the line, and requested him to rouse the station-master and see if the down line was blocked. He afterwards rendered all the assistance he could. He did not examine the permanent-way.

Adam Robinson is the station-master at Morpeth. He had retired for the night before the accident happened, and some one roused him. The first thing he did was to block the line, and he then rendered help. He examined the permanent-way shortly after. The spot he examined was 8 or 10 yards beyond the water-tank. He did not look at the joint opposite the water-tank.

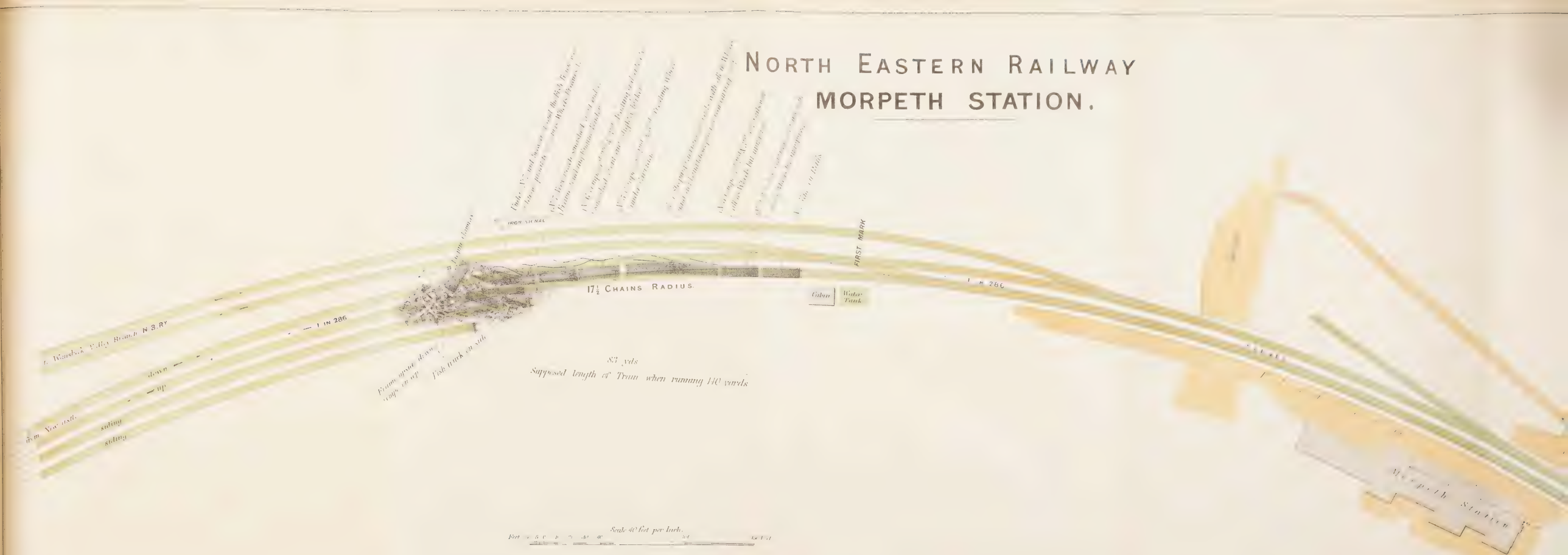
David Johnstone is a signalman at Morpeth station. He was in his cabin when the accident occurred. He noticed the train passing his cabin about 1.42 a.m., but could not say positively whether steam was shut off. It seemed to be going at its usual speed, but he could not say exactly what that was. He first heard a sound as if something had broken under his cabin, and immediately went out with his hand-lamp to see what had happened. He met the guard, who asked him whether he had blocked the road, and he replied that he had blocked it with signals. The line was clear for the train to go through. He went afterwards to examine the permanent-way, and saw a broken fish-plate at the joint near the water-tank on the off-side. It was lying close inside the joint which it had come off. He also saw one broken bolt. He does not know what became of the broken fish-plate or bolt. He could not say whether the joint referred to was uneven. The trains that passed Morpeth on the up-line between 4 p.m. on Saturday and the time of the accident were,—a goods-train an hour before the express, which stopped at Morpeth to take water, a mail-train at 10.35 p.m., a fish and passenger-train leaving at 9.10 p.m., a slow passenger-train leaving at 7.49 p.m., a coal-train leaving at 7.10 p.m., a slow passenger-train coming from the south, and leaving on its return journey at 7.3 p.m., a mail-train at 6.22 p.m., a goods-train at 5.7 p.m., a passenger-train at 4.15 p.m., and a light-engine at 4.4 p.m. All the trains going south between 4 p.m. and the train that met with the accident stopped at Morpeth.

Arthur Pallister was the telegraph-boy on duty in the Morpeth signal-cabin. This train was reported by telegraph from Berwick at 12.35 a.m. as having left at 12.32 a.m. It was next reported from Bilton at 1.20 a.m. as having left at 1.19 a.m. It would pass Morpeth about 1.43 a.m. The train was reported on the previous night from Bilton at 12.54 a.m. as having left at 12.53 a.m.

John Armstrong Haswell has been for 25 years assistant locomotive engineer on the North-eastern Railway. The engine attached to this train was No. 901. It was built at Gateshead in 1872, and is a first-class passenger express engine. It has four coupled wheels 7 feet in diameter, and leading-wheels 4 feet 6 inches in diameter. The weight on the leading-wheels is 12 tons 10 cwt., on the driving-wheels 14 tons 13 cwt., and on the trailing-wheels 12 tons 13 cwt. There was a six-wheeled tender behind it. The cylinders are 17 inches in diameter, with 24 inches stroke. It was a very steady running engine. The wheel-base was the ordinary base for fast passenger-engines. There was a very little lateral play, just enough to make it run steady. If a road were tight to gauge, the engine would have a tendency to strain it on a sharp curve. He has examined the engine since the accident. The off-leading spring had been broken off at the links, and the off-driving spring was broken. He thinks this was done when the engine tumbled on its side. The tyres of the wheels of the engine were turned up in January last, having then run for 12 months. There was nothing about the engine that he could ascertain that could have led to this accident. The engine-driver was a steady and experienced man. 20 or 25 miles an hour would be a proper speed to run through Morpeth station. The drivers have instructions to reduce speed when running round sharp curves, and he believes they have had instructions to run round the Morpeth curve carefully. He got to the scene of the accident soon after mid-day on Sunday. He saw the joint near the water-tank, which was in the same position as now, except that another fish-plate has been put on since he saw it. There was only one fish-plate on when he saw it. After knowing that the bolts of the spring links had broken, he thought that if they had broken before the engine came to that joint they might have been the cause of the accident. But after finding the spring underneath the engine, it altered his opinion altogether. It was pretty clear that if the spring links had broken somewhere near the particular joint, the spring would have tumbled off at that place. This train ran at a reduced speed compared with other expresses. He believed the driver had driven this engine since it was first turned out over the same portion of railway. It would be as safe on the curve as on the level at 30 miles an hour, speaking with respect to the engine and train.

Alfred Harrison is engineer of the northern division of the North-eastern Railway, and has been so for several years. He was at Newcastle when he heard of the accident, and came to Morpeth by the express, and got to the spot at 3.30 a.m., about two hours after the accident. There were a few platelayers about, and Mr. Batey, the permanent-way inspector. As soon as it was light, he went with Mr. Mitford to examine the permanent-way. He traced the marks back to the joint opposite the water-tank. There was a mark on the chair just before it on the station side, but he was not aware it was broken. There was a slight mark on the lug of the chair on the platform side of the joint on the inside of the outer rail of the curve. He is satisfied that the key was in this chair when he saw it. One of the fish-plates of that joint was lying in the "six foot" just outside the rail. The other fishplate he searched for, but could not find. Three bolts at least were near the fish-plate; some were in the "six foot" and some inside. The bolts were broken through, and were evidently fresh breaks. There were three pairs of rails (24 yards) beyond this point which appeared to be undisturbed. The chairs seemed to be all right, but afterwards some proved to be broken. There were the marks on the rail which are now there, but the two ends at the joint were just as they are at present. Beyond the three lengths of rails the line was entirely broken up, and wreck lay about. The rear van was on its wheels immediately to the south

NORTH EASTERN RAILWAY
MORPETH STATION.



To accompany Captain Tyler's Report dated the 27th March 1877.

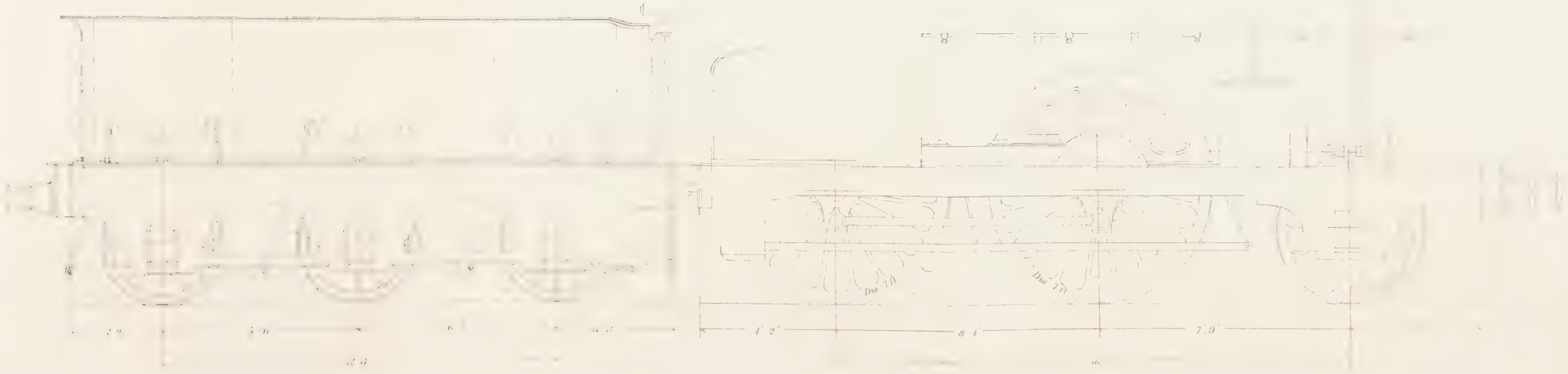
PLATE No. 2

NORTH EASTERN RAILWAY.

No. 901, LOCOMOTIVE ENGINE.

LOCOMOTIVE DEPARTMENT,
GATESHEAD ON TYNE,

April 6th, 1877



SCALE ⅜ INCH TO A FOOT.

of the first joint disturbed, and six vehicles in front of the van stood upright on their wheels ; but one pair of wheels of the leading carriage had been knocked away from their proper position, and were jammed under the carriage. In front of these vehicles was a confused mass of wreck on the up line and on the sides of it. One of the carriages had been jammed into the tender. The permanent-way is composed of double-headed steel rails, weighing 80 lbs. per yard, with three tie-rods to each rail, being specially strong because the curve is rather sharp. The curve is 17½ chains radius, and the gradient is 1 in 286, rising towards Newcastle. The chairs average 3 feet apart ; the tie-rod chairs weigh 50 lbs. each. The sleepers are 9 feet long by 10 inches by 5 inches, but there are some larger sleepers 12 feet long by 12 inches by 6 inches. The crossing of the Wansbeck Valley line is 8 yards on the station side of the joint opposite the water-tank. He thought the road at the spot was in excellent order. He did not notice anything which might have led to the accident. He was inclined to think that it was not the engine that first left the rails. The fish-plate he saw was not broken, but the bolts were broken.

Joseph Stanley Mitford is permanent-way storekeeper for the whole line, and assistant engineer to Mr. Harrison for the northern division of the North-eastern Railway. He reached the spot with Mr. Horatius Fletcher about three hours after the accident. He first went to the wreck, and then went to telegraph for men to Newcastle and Bilton. Then coming past he observed a fish-plate lying outside the off-rail of the curve, but he could not find the corresponding fish-plate of the joint. He noticed the bolts, he thinks two or three on the outside and one on the inside. He did not take much notice of them, and cannot say exactly how they were broken. He could see a little of the white part of two bolts as if they were new fractures, but he cannot speak to the other two. The chair behind the joint, north of it, was lying under the rail apparently in its proper position. It was only on touching it with his foot that he found it was broken through the bottom, and on trying it with the hammer he was certain of it. The chair was complete, except that it was broken through the bottom. He tried the gauge about 10 or 11 o'clock in the morning, and it was then the same as it is now, about $\frac{3}{16}$th inch tight. The chairs in advance of the joint were broken, but still in their places, and an engine went over them backwards and forwards after the accident. The key was in the chair at the joint opposite the water-tank, but it was canted round a little.

Horatius Fletcher is assistant locomotive superintendent on the North-eastern Railway. He reached the scene of the accident about 4.40 a.m., three hours after the accident. After looking at the engine and carriages, he went and examined the permanent-way, about the same time as Mr. Harrison and Mr. Mitford. He noticed that the key was out of the chair north of the joint opposite the water-tank, and was lying by the side of the chair. It was on the ground and entirely out of the chair, and he could move the rail with his foot. The chair appeared to be complete, and he did not notice that it was broken. There was no mark whatever north of this chair. He noticed one fish-plate lying near the joint—he cannot say whether it was inside or outside the rail—and he saw four broken bolts. He did not look to see if they were newly fractured. The chair next in front of the joint appeared to be marked on the outside jaw as if a wheel had passed over it, but it was to all appearance complete. The next chair was marked also lower down on the outer jaw. He cannot recognise the chair that was just behind the disturbed joint.

James Batey has been inspector of permanent way for 26 years. He was on the spot an hour after the accident and examined the permanent way by the light of his hand-lamp. There were no platelayers about. He was the first man of his department to get to the spot. He first found the crossing all right. Then he went forward and found the broken chair at the second joint from the crossing and opposite the water-tank on the platform side of the joint. There were marks on the outside of the chair. The key was in that chair when he first saw it, but falling a little. He did not observe any scratch or rubs on the chair. One fish-plate was lying outside in the "six foot," and the bolts were lying opposite the joint where the fish-plate was, and on the same side. He does not know where the other fish-plate is. The marks on the rail were the same as now. He did not notice whether there was an overlapping of the rails at the joint. He knew the chair was broken, because the outer edge of it was turned over a little. The chair next in front of the joint, and two others in front of it, he afterwards found to be broken. He did not try the gauge or the levels that morning. He cannot account for the accident. He had seen the road before at 7.30 a.m. on Saturday morning, but his attention was not specially called to this particular joint. Occasionally he finds broken chairs on the curve, but not more than on the straight parts ; but the ganger would know better than he. The platelayers have orders to make the cant according to circumstances. On the curve in question the cant should be 1¼ inch to 1½ inch. The cant is a little lower there on account of the crossing. He did not look more than a couple of feet for the broken bolts. He found one bolt, and three were wanting.

Robert Reid is the ganger at Morpeth. His length extends from 18 miles north to 16½ south, so that the scene of the accident is just at the end of his length. The piece of line where the accident happened was repaired a fortnight ago. He then beat up the sleepers a bit. About four o'clock on Saturday afternoon he looked at the spot, and is sure it was right. He saw the joint but did not notice it particularly. There might have been a broken chair there without his noticing it. He has not found many broken chairs on the curve. He got to the scene of the accident about five o'clock on Sunday morning. The fishplates were off the joint opposite the water-tank. He found one of them about 10 yards off. There were some fishbolts lying there, but he could not tell whether they came out of that joint. He could not account for the accident. It was six o'clock when he saw the joint opposite the water-tank, and an engine was then going to and fro.

Hubert Laws is a civil engineer, residing at Newcastle, and has been connected with the construction of railways for 17 years. He examined the scene of this accident yesterday morning at the coroner's request. He came to the conclusion that the engine left the rails at the joint referred to, opposite the water-tank. There were three notches in the rail, and one continued in a groove for 18 inches or 2 feet in a slanting direction along the rail towards the "six foot." He could not trace the slighest indication of anything being off the line before that. He could trace the track taken by the engine and carriages in the ground and on the sleepers ; and a number of chairs and tie-rods were broken and bent in various ways. He has seen the engine, and there was nothing in that which, in his opinion, could cause the accident. He measured the cant by the eye, and considered it sufficient. The cant should be 1·3 inch for a speed of 20 miles an hour round that curve, and for a speed of 30 miles an hour the cant should be 3 inches. His idea was that during the frosty weather of the past 10 days it was impossible to pack up the sleepers, and when the wet weather came on suddenly a pumping action was caused, and the joint in that way lowered, so that the train had risen over it. He thinks the chairs were broken by the accident, and were not the cause of it. He did not think the rail

on which the indentation was could have received that indentation without being separated from the other rail. That rail was pulled inwards owing to some passing wheels catching the tie-rods, and dragging it, and the indentations were perhaps made by following vehicles. The force which broke the fish-plate would break the chair at the same time.

Conclusion.

I came to the spot by train from Newcastle this morning, and on reaching the platform at Morpeth I went first to examine the permanent-way. I saw nothing till I reached the joint opposite the water-tank, which is so frequently referred to in the evidence. I there found a rail on the outside of the curve, which was marked at that joint with four indentations. One of these was about the middle of the end of the rail, and extended forward for two feet in a slanting direction along the top of the rail. It appeared to have been made by the flange of a wheel which had dropped off on the outside of the rail, at the end of the two feet. The three other indentations were inside of that one. I observed that new chairs had been inserted under the off-rails, one on the platform side of the joint opposite the water-tank, and three in advance of it; but no chairs had been removed on the near side. After that five chairs remained in their places, and the rail was undisturbed. Further forward, the next rail was found bent outwards, and had been replaced by a new one, but the same chairs remained on the sleepers. The road had been considerably distorted, and some of the chairs appeared to be newly chipped. The track of the engine was no longer discernible on the ballast, but it is stated to have struck the off-rail about 30 yards in advance of the first mark, and the road from that point forward had been completely torn up, new chairs having been inserted on both sides, but the old rails remaining in on the near side, while new rails had been put in on the off-side. I was very anxious to find portions of those broken chairs near the disturbed joint which had been replaced by new ones, but I was unfortunately unable to ascertain which of the broken portions shown to me had belonged to the different sleepers. I also asked for the fish-plates and bolts belonging to the joint opposite the water-tank. I was shown one bolt, and was told that no other bolts or nuts could be shown, they having been lost amongst the *débris*. I picked up, however, three nuts, with portions of bolts in them, in the ballast close to this joint. One of these nuts contained a portion of a bolt that fitted on to the other piece of bolt that was shown to me. I think these nuts may fairly be supposed to have come off that joint. They did not appear to have received any injury such as might have been expected if wheels had passed over them, but they all showed recent fractures. There was a good deal of dirt in them, but there were bright portions in each. One fish-plate of this joint, I learned, had been replaced, and the other could not be found. I obtained in evidence a description of what occurred beyond that point; but the important matter to look at is the exact point at which evidently the engine first left the rails.

I have no doubt that the engine was the first portion of the train to leave the rails. This is proved by the suddenness of the result. The engine turned over on its side and came to rest at 84 yards only from the joint opposite the water-tank. I examined the engine, which I found at the other end of the station to which it had been removed. The off-leading-spring had been broken off from the engine; and the buckle was loosened on the plates. The bolts of the spring-links were fractured, and both showed clean sections of fracture. Having regard to these fractures, and to the position in which the spring is said to have been found under the engine, I have no doubt that the links were fractured, and the spring became thus detached from the engine as the engine fell over on its side, and in consequence of the spring striking against a rail. The marks found on the outside of the spring confirm this conclusion. On taking that spring to pieces I found that the upper plate showed a small area of old flaw, for a considerable portion of its section a more recent flaw, and over between $\frac{1}{3}$ and $\frac{1}{2}$ of its area a recent fracture. The last plate but one was cracked, and showed a flaw through a large proportion of a half of its section on being fractured. The lower part of the buckle of the off-driving-spring had been broken away, and all the plates of that spring except the upper one were gone. I examined the wheels of the engine and other parts, and I found no indication about them which would lead to the belief that any defect in the engine had caused or contributed to cause this accident.

Looking to the condition of the engine and of the permanent-way, and considering the evidence which I have received, I come to the conclusion that the accident was caused by the leading-wheels of the engine in the first instance, and afterwards other wheels, having mounted the off rail at the joint on the outside of the curve, opposite the water-tank. The end of the rail which still remains in the road is sufficient evidence that such was the case. The off leading-wheel of the engine could not so have mounted the rail if the joint had been perfect, with the fish-plates, and the bolts and nuts, all in their places. In order that the flange of the wheel could so mount the rail, it was necessary that the joint should have been in a defective condition, and that the end of the rail on the station side of the joint should, by a slight spring, so to speak, have made way for the flange to mount the middle of the rail in front of it. The fractured chair on the station side of the joint would allow of the required spring or movement in the rail behind the joint, and the absence of the fish-plates would allow the mounting of the flange on to the middle of the rail in front. Under no other conditions could the accident have occurred in the way it did. It is evident that there must have been damage and destruction to the permanent way—including the loss of the fish-plates from the joint in question—before the engine of this train reached the water-tank, and that such previous damage has directly occasioned this serious accident.

I may add that the facing-points which have been referred to, are so far from the spot that there is no question whatever of their having had anything to do with the accident, and that the crossing of the Wansbeck Valley line is also eight yards from the point at which the accident originated.

It would obviously be better if a deviation line could be constructed, to avoid the use of so sharp a curve on a main-line traversed by the fastest trains between England and Scotland; and so long as this curve exists it is necessary to employ moderate speeds only in passing round it. Meanwhile, with a view to diminish the risk of such damage being caused by passing trains, and to the prevention of such an accident in future, I have recommended that the permanent-way should be strengthened, and the gauge eased on this curve, making it, say half an inch slack, in place of a quarter of an inch tight; and I have no doubt that the Company will at once adopt these precautions.

I have &c.,
H. W. Tyler.

The Secretary,
(*Railway Department,*)
Board of Trade.

Printed copies of the above report were sent to the Company on the 10th April.

SOMERSET AND DORSET JOINT RAILWAY.

SIR, *Wincanton, 2nd March* 1877.

IN compliance with the instructions contained in the Order of the 28th ultimo, I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the accident that occurred on Monday last, the 26th ultimo, on the Somerset-and-Dorset Joint Railway, under the control of the Midland and London-and-South-Western Railway Companies.

In this case, the 6.10 p.m. up-passenger-train from Bournemouth for Bath, consisting of a tank-engine, a break-van, and four passenger-carriages, was travelling at a speed of perhaps 35 miles an hour, between the Templecombe and Wincanton stations, and had reached a point about three miles from Templecombe, and about three-fourths of a mile from Wincanton, when the leading wheels of the engine left the rails. The engine ran in this condition for about 200 yards, at the end of which distance the driving-wheels also left the rails; and the engine then turned over on the east of the line, and came to a stand about 240 yards from the point at which its leading-wheels had left the rails, with its funnel in the ballast, and its wheels in the air, leaving its bogie-truck opposite its leading end, which was pointing towards Templecombe, in the opposite direction to that in which it had been travelling. The leading van was brought to rest, with its wheels off the rails in an upright position, with its framing detached from them, on the west of the line, on its side, and with its body smashed to pieces. The second-class carriage behind the break-van was in a leaning position, also on the west of the main line. The first-class carriage behind it was in somewhat similar position. The two third-class carriages last in the train stood on their wheels in the ballast across the off rail.

Up to the present time six passengers have complained of injury. The engine-driver was so much injured that he died shortly afterwards, and the fireman and guard, who narrowly escaped with their lives, were also severely injured.

Description.

On reaching the spot this morning, I found the engine and its bogie-truck standing on the east of the line, the engine having been pushed over further from the line than the spot where it first fell, and with its wheels under it in place of being in the air. The bogie-truck had also been pushed further from the rails, to admit of the passage of trains. On the west of the line, two carriages, which had been second and third in the train, were on their sides, having also been pushed aside to clear the line for the passage of trains; and portions of the remains of the break-van, which had been running in front of them, were piled up behind them.

This portion of the line is perfectly straight, and on a rising gradient towards Wincanton of 1 in 493, preceded by a rising gradient in the same direction of 1 in 1,308. The permanent-way is laid with rails of the Vignoles pattern, weighing 68 pounds to the lineal yard, and supported by eight sleepers to a length of 24 feet. The fastenings are with fang-bolts at the joints, and fang-bolts and dog-spikes in the intermediate sleepers. The sleepers are laid transversely, and are of a rectangular form, measuring 9 feet long by 10 inches by 5 inches in section. The carriages in the train were all four-wheeled vehicles, and were joint stock of the two companies.

The engine of the train, No. 1,262, ran, as will be seen by the accompanying diagram, on four coupled wheels in front, with a bogie-truck behind. The cylinders measure 17 inches in diameter, by a stroke of 24 inches. The coupled wheels are 5 feet 6 inches in diameter, and the bogie-wheels, under the trailing end, 3 feet in diameter. The wheel-base between the centres of the axles of the coupled wheels is 8 feet, and between the driving axle and the centre of the bogie-truck 11 feet 3 inches. The wheel-base of the bogie-truck is 5 feet. The total wheel-base, therefore, between the leading axle of the engine and the centre of the bogie-truck is 19 feet 3 inches, and from the leading axle of the engine to the trailing axle of the bogie-truck 22 feet 6 inches. The weights, as given to me, of the engine in working order, with the tanks and coal bunker full, are:—total, 43 tons 9 cwt. 3 qrs., made up of 13 tons 9 cwt. 1 qr. on the leading-wheels, 14 tons 12 cwt. 2 qrs. on the driving-wheels, and 15 tons 8 cwt. 0 qrs. distributed on the four wheels of the bogie-truck.

The bearing-springs of the engine were at my request brought to the sheds of the Midland Company at Kentish-Town for examination. The buckles were removed, and the plates spread out separately on the floor of the running-shed, with the buckle at the head of each spring.

Examining them in that position, I found that the bearing-springs of the bogie-truck, composed each of nine plates, 5 in. wide by $\frac{1}{2}$ in. thick, were all sound, as well as the buckles. The right leading-spring of the engine was composed of 13 plates, 5 in. wide by $\frac{7}{16}$ thick, except the top-plate, which was $\frac{1}{2}$ in. thick. These plates were all sound with the exception of the second plate, in which I observed a crack. On its being broken, the section of fracture exhibited an old flaw 1 inch long by $\frac{3}{16}$ deep, and a recent crack, extending over one half of it and a small part of the other half, $\frac{3}{8}$ deep. The remaining portion had been sound. The left leading-spring, similarly composed, had 10 plates sound. The upper plate, $\frac{1}{2}$ in. thick, showed an old fracture under the buckle, through the pin-hole. The second plate, $\frac{7}{16}$ thick, showed an old flaw, 2 in. long by $\frac{1}{4}$ in. deep, a more recent flaw over one half of its surface, and a recent fracture over the remainder of the other half. The third plate showed an old flaw, $1\frac{1}{2}$ in. long by $\frac{1}{4}$ deep, a recent fracture for the remainder of the section, all but a depth of about $\frac{1}{16}$ in., through which it was broken in my presence. The 13th plate showed a crack, and, when broken, a recent fracture $3\frac{3}{4}$ in. by a full $\frac{1}{4}$, $1\frac{1}{2}$ in. from the centre of the pin-hole. The driving-springs, composed of 13 plates, each 5 in. by $\frac{7}{16}$ in., were all sound, but the neck of the buckle of the left driving-spring showed a recent fracture through more than half of its section.

The bogie-truck runs on four wheels, and has inverted springs, one on each side over the axle-boxes, each 3 feet 3 inches long by 5 inches wide, and each containing nine plates. There are india-rubber blocks underneath them, to soften the action of the bolts by which they are secured. There are also two india-rubber springs, one on each side, for lateral action. The only fractured portion of this truck was the stay connecting the ends of the frames outside of the trailing axle. The play of the axle-boxes on the journals of the bogie-truck is a quarter of an inch or less. The leading axle of the bogie-truck is very slightly bent.

The following is a report by the locomotive-superintendent of the Midland Railway of his examination of the engine after its return to Derby:—

I have this day made an examination of engine No. 1262, and give you the particulars of it as under.

Leading end of engine.—Foot plate of engine torn up; both rail guards torn off; bolts sheared and left in place.

Waste rod and connecting bars, and left-hand cylinder waste-cock.—Torn off.

Brake rods and work all carried away.

Wheels.—Leading wheels in good condition, and correct to a gauge of 4′ $5\frac{1}{2}$″ full. On the left-hand

leading-tyre there is a mark or indentation on the edge of flange, where the wheel has evidently struck a rail, or some other obstacle. There is also a slight flat mark on the flange, about $\frac{3}{8}''$ wide, continuing from the indentation about half way round the tyre, and also two other slight marks. Nothing noticeable on right-hand leading-wheel.

Driving wheels are in good condition, and correct to a gauge of 4′ $5\frac{1}{2}''$ full. The left-hand driving-tyre has a flat mark on outside of flange for 4′ 6″ in length.

Spring link adjusting screws.—Inspector Lane, who saw these when at Bath, states the trailing screw of the left driving-spring was found broken. This is the one you saw yourself when at Wincanton; and it showed a slight defect, but the major portion of it was sound, and newly broken.

The left-hand leading screw leading end was also found broken, but showed quite a fresh fracture, and was, no doubt, broken when the rail guards were carried away.

Bogie all right, except hind cross stay bar broken. The wheels correct to a gauge of 4′ $5\frac{1}{2}''$ full, with but a slight difference on leading pair.

There is nothing whatever in all this to show that any defect existed in the engine prior to her getting off the road; and I am surprised that so little damage has been done, both to her wheels, springs, and gearing.

The engine will remain as she is until after the inquest.

The point at which the first mark was found in the permanent-way is 242 yards on the Templecombe side of where the engine lay. At that point the off rail was broken through its head to the depth of $3\frac{1}{4}$ inches, out of a total depth of $4\frac{1}{2}$ inches. This rail was also much distorted, as shown by the accompanying sketch, its leading end having been permanently deflected downwards, and bent outwards to the extent of $4\frac{5}{8}$ inches, two feet in advance of the point of fracture. The fracture in the rail is 10 feet $6\frac{1}{2}$ inches from the leading, or Wincanton end, and 13 feet $5\frac{1}{2}$ inches from the trailing or Templecombe end. The distance between the sleepers under the fracture and in front of the fracture on the off side is 3 feet 6 inches.

Behind this rail, and for the next two lengths, the gauge varied from, first, a quarter of an inch wide, to half an inch, to five eighths, and then back again to a quarter of an inch wide, as measured on every sleeper. The level, taken transversely, of the joints at the Templecombe end of where this rail had been, was correct. But a new rail had been inserted, and there had been some little adjustment, in getting the rails into line at this point, after the accident, the off rail behind the fractured rail having been found to be also pushed outwards. The further levels of the rails, as taken for the same two lengths as the gauge, was in the first instance correct, and then varied from five eighths of an inch of super-elevation of the off over the near rail, down to a correct level. The accompanying diagram shows the condition of the permanent-way as restored, and as I saw it, after the accident. I took the following evidence on the spot:—

Evidence.

Alfred Francis, a foreman-platelayer, employed four years on the Somerset-and-Dorset Railway, reached the scene of the accident about 9 o'clock, half an hour after the accident. He arrived with Mr. Hayman, the Wincanton station-master, and John Francis, the ganger of the length, but no other platelayers. It was a bright moonlight night. He examined the road at the spot where the engine left the rails. He found a rail partly broken on the off side. It was standing on the sleepers on its base. It was secured by fish-plates to the ends of the rails next to it, and all the plates were in their places. It was bent outwards. There was a fang-bolt head snapped off on the sleeper in advance of the fracture. The sleeper under the fracture was bolted and dogged, and the fastenings were secure. The remaining fastenings in front of the fracture were all in the sleepers, but pushed a little outwards. The fastenings had been forcibly pushed out in the wood. The rail in advance of that rail, on the off side, was also pushed outwards. the middle of it to the extent of perhaps half an inch. The rail opposite the fractured rail, on the near side, still stands in its place, and was not moved. From this point forward, the rails were twisted first to one side and then to the other side. Sometimes the sleepers were pushed bodily to one side or the other, and sometimes the metal on one side only was disturbed. The off-rail had been pushed outwards on the Templecombe side of the fractured rail, and was pushed back with a bar after the accident, at the joint, but not in the middle. Inspector Hooper ordered them not to touch the road on the Templecombe side of the accident after the accident, and they did not do so. He does not think that any of the rails were canted over, outwards or inwards, after the accident; but the heads of the bolts were, a good many of them, broken; about 10 or a dozen in the 242 yards. He had walked the length all that week, and on the Saturday night previous to the accident. He had not seen it on the Sunday or Monday of the accident.

Henry Hooper has been inspector of the permanent-way from Shepton-Mallet to Sturminster-Newton, a distance of 22 miles, from 7th of August last. He reached the spot where the accident occurred with the break-down gang, about 12 o'clock, $3\frac{1}{2}$ hours after the accident. He went at once to the broken rail, and put the gauge on close to the breakage; and he found the gauge about a quarter of an inch wide at that point. In front of the fracture the rail was bent outwards, so that the gauge was widened to the extent of about 2 inches. The fractured rail was standing upright on the sleepers. He cannot say whether it was attached to the rails at each end of it by its fish-bolts. He noticed that the dog-spike and one fang-bolt, both on the outside of the fractured rail, on the sleeper in front of the point of fracture, were both newly broken off, but he did notice any of the fastenings in advance of that point. He cannot say how the rail opposite the fracture was. He noticed a mark on the outside of the fractured rail, close to the breakage. He saw the rails twisted in and out in various forms, and some of the rails pushed out as much as $1\frac{1}{2}$ inches between the fractured rail and the wreck. In some places he could see two marks, and in some places only one mark on the sleepers. There was a flange-mark 6 inches from the rail, measured to the outside of the mark, on the sleeper in advance of the sleeper which was under the fracture; and that mark extended forward over the sleepers in advance parallel to the rails. He has since taken out five sleepers which were heavily cut further in advance. No rails have been replaced, except the fractured rail, for 240 yards, except near the point where the vehicles lay after the accident. He has no idea of how the accident has happened. He walked over the same spot between 10 and 11 o'clock on the same Monday morning. He fancied at night, after the accident, that the road looked a little crooked. During the last fortnight he has complained to the superintendent, Mr. Lowe, and told him that in riding behind driver Sherrin one day he found the engine rolling very much; and one of his gangers, named George Light, has complained of the engine rolling and knocking the line about as it used to do.

John Francis, the ganger of the length on which the accident happened, reached the spot about nine o'clock, with Alfred Francis, his father. He was occupied in taking the injured people to the station on a trolly, and did not stop to examine the point of the accident. He did not notice the fastenings in the fractured rail.

John Hewitt, the locomotive foreman in the employment of the Somerset-and-Dorset joint committee at Bath, reached the spot about 12 o'clock at night, with the break-down gang, about three and a half

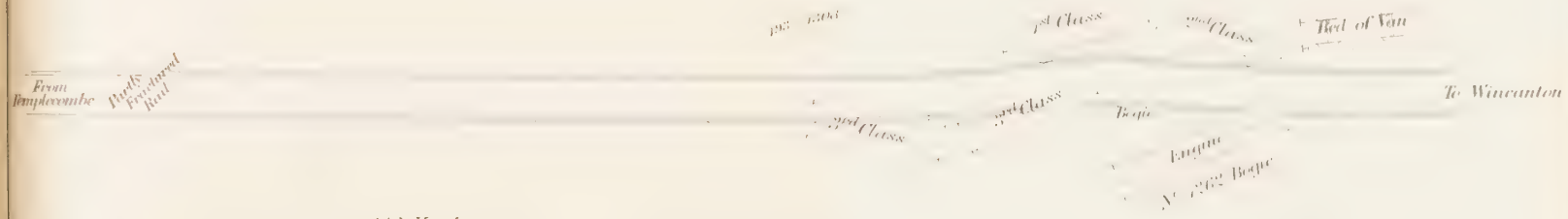
PLATE Nº 1.

To accompany Captain Tyler's report dated the 2nd March 1877

SOMERSET & DORSET LINE.

SKETCH OF ACCIDENT NEAR WINCANTON.

26th Febr 1877.



242 Yards

242 Yards

68 lbs Flange Rail of Iron Ebbw Vale make
1875 Date.
8 Sleepers to a 24'. 0" Rail.

PLATE N° 2

To accompany Captain Tyler's report of the 2nd March 1877

SOMERSET & DORSET LINE.

PLAN OF SCENE OF ACCIDENT NEAR WINCANTON.

Point at which Engine first left the rails.

From Templecombe

To Wincanton



PLAN OF DAMAGED RAIL

ELEVATION OF DAMAGED RAIL.

Position of fracture through upper table and web.

SECTION OF RAIL.

with fastenings as inserted after Accident.

Scale of Feet.

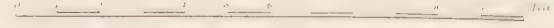


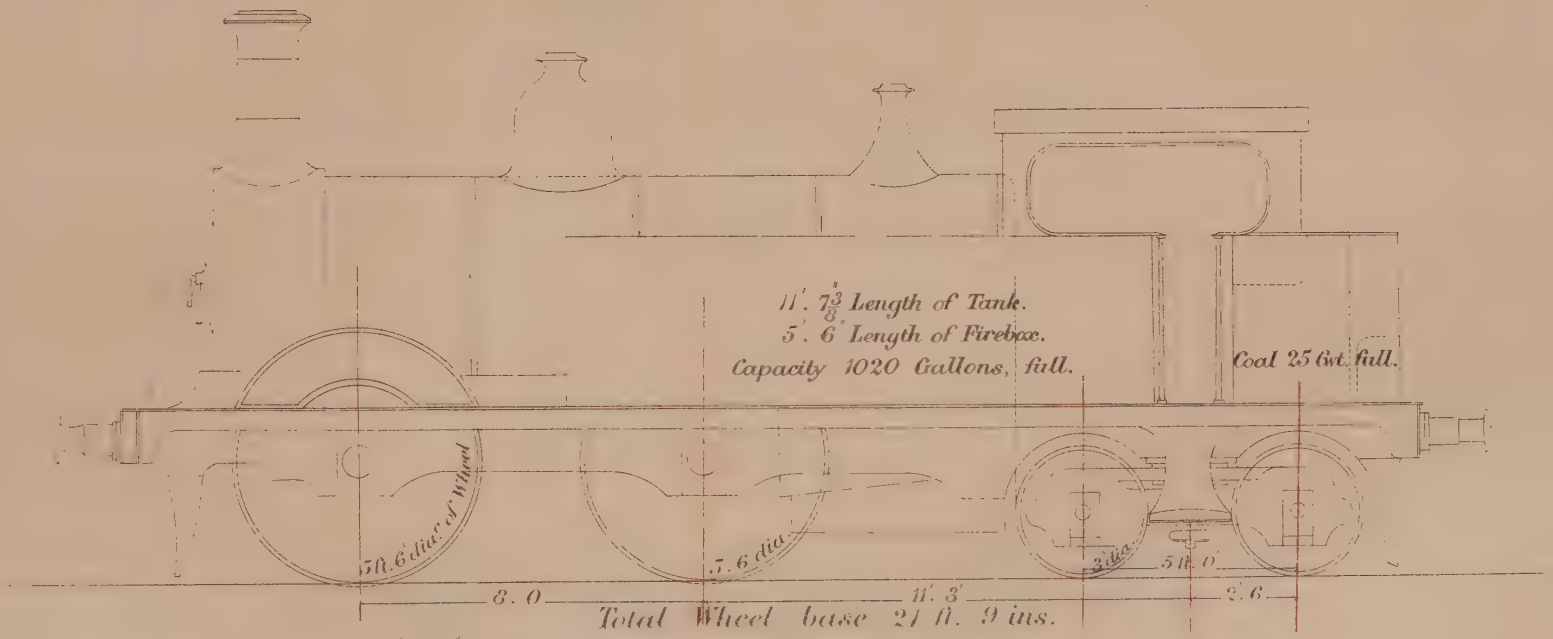
PLATE N° 3.

To accompany Captain Tyler's report dated the 2nd March 1877.

SOMERSET & DORSET LINE.

ACCIDENT AT WINCANTON.

Scale 1" — 1 Foot.



Cylinders 17" × 24"

T.	C.	Q.
13	9	1
14	12	2
15	8	0

Total Weight T. C. Q. 43 . 9 . 3 *in working order.*

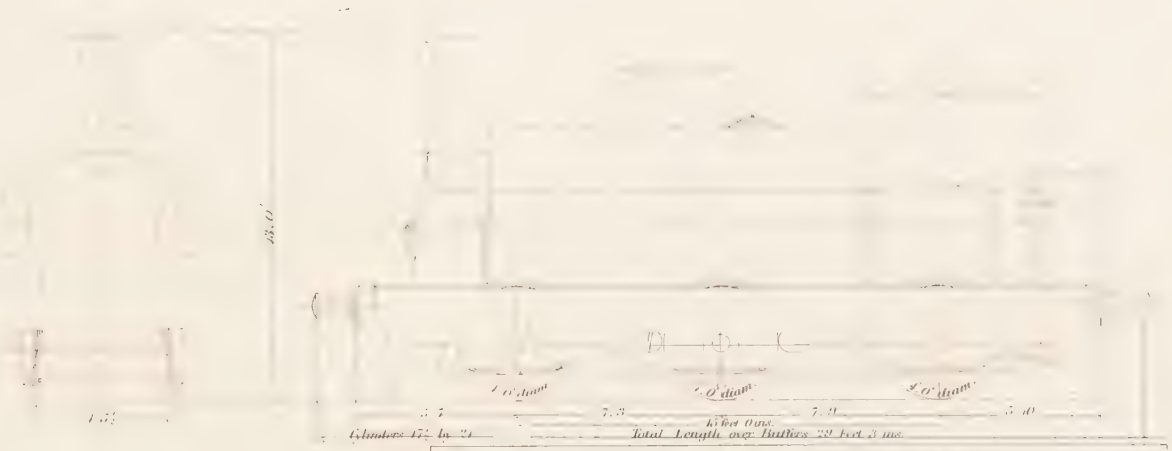
1262 Class.

To accompany Captain Tyler's report of the 2nd March 1877.

TANK ENGINE Nº 7

S. & D. RAILWAY.

Fox, Walker & Cº. Makers.



T.	C.	Q.	T.	C.	Q.	T.	C.	Q.
13	14	3	16	5	2	14	6	3

Tons Cwts Qrs

Total 44 . 7 . 0 on 15 Feet.

30 Cwt Coal — 1100 Gallons of Water — Boiler and Fire in working order.

Maximum weight S. & D. Tank Engine Nº 7 With 2 Tons of Coal

Tank full Boiler in working order Glass half full of Water ordinary Fire.

T.	C.	Q.	T.	C.	Q.	T.	C.	Q.
13	16	3	16	12	2	14	16	3

Total 45 . 6 . 0

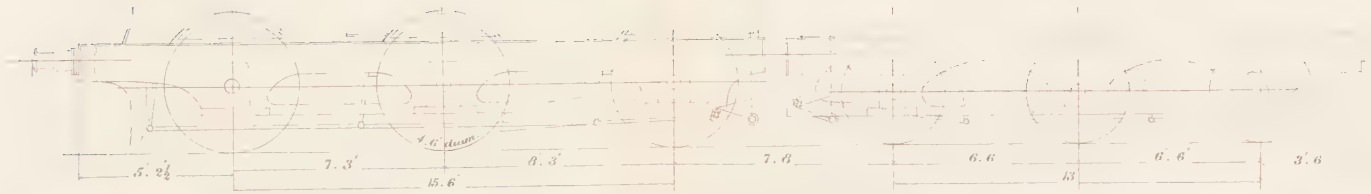
Scale $\frac{1}{4}$ in. to 1 Foot.

To accompany Captain Tyler's report of the 2nd March 1877.

TENDER ENGINE No 20

S. & D. RAILWAY.

J. Fowler & Co



Cylinders 17½ by 24 ins. — *Total Length over Buffers 47 Feet 8½ ins.*

T. C. Q. 11 . 8 . 0	T. C. Q. 12 . 5 . 3	T. C. Q. 8 . 18 . 3	T. C. Q. 8 . 0 . 2	T. C. Q. 8 . 12 . 2
	Total T. C. Q. 32 . 12 . 2		Total T. C. Q. 24 . 12 . 0	
Weight in working order of Engine. Glass half full of water and ordinary Fire.			*Maximum weight full of water and 3½ Tons of Coal*	

T. C. Q. 7 . 19 . 0	

Total Weight T. C. Q. 57 . 4 . 2 *of Engine & Tender in working order.*

Scale ½" — 1 Foot.

hours after the accident. He first examined the engine as far as he could from the position in which she lay. He found the bogie parted from the engine, but the centre pin of the bogie left in the framing, and the nut was broken off. The left bearing-spring of the bogie was bent slightly over, and the back stay was broken.

As far as at present ascertained, the trailing wheels of the bogie appear to be right to gauge, and the leading wheels appear to be slightly out of gauge. He found the engine with the dome buried in the ballast, and the safety-balances smashed down. The right connecting-rod was slightly bent, and the left driving-spring trailing-hanger was broken. The roof of the cab was smashed down, and the reversing-lever was one notch in forward gear. He did not find anything about the engine which, in his opinion, could have contributed to the accident. He then came back 242 yards, and examined the fractured rail on the off-side of the line. He thought the rail showed a wider opening at the fracture than it does at present. He noticed that it was deflected permanently in front of the fracture. It was fastened to the other end at both places by the fish-bolts. The fastenings were all broken off on the off or outside of the off rail on the three sleepers between the fracture and the joint. He did not notice anything more near the fractured rail. He followed the track of the flange on the sleepers between the rails, but did not notice anything else up to where the wreck lay. He examined the engine on Monday morning before she went out, and he was employed upon her on Sunday and Monday morning, adjusting the length of the eccentric rods. He noticed the wheels and springs, and was satisfied that they were in good working order, and he went under the bogie himself and noticed that everything was right. He has repeatedly ridden on the engine, No. 1262, and up to the time of the accident she ran very steadily. He rode upon her last Thursday from Bath to Templecombe, and rode very steadily. The deceased engineman was with him on that day, and he called his attention, and said, "She is running steady, Tom." There had never been any question about her running steadily since she had been under repair last December. Her wheels were bad before that. There had been a question about her running steadily before that. The lateral rubber springs of the bogie wanted a little more compression; that was given to her, and the engine then ran more steadily. He had heard no complaint from driver Moorman since last December. The complaints which he heard did not come from the driver, but, as he understood, from the permanent-way department, and Mr. Lane came from Derby to examine the engine. Moorman had been driving this engine, No. 1,262, for a year past on 1st January last. He had applied for the engine, because he preferred that engine, which was a Midland engine, to driving a Somerset-and-Dorset engine. They preferred these Midland engines, because they got along with their loads better, and because they are comparatively new, and do not require much repair.

Mr. B. S. Fisher, the locomotive-superintendent of the Somerset-and-Dorset Railway, has been so for more than three years. He has frequently ridden on the engines of the 1,262 class with a view to rectify any little fault that may have been complained of, and he has from day to day had the engine lifted, and taken pains to adjust the lateral action, by putting more compression on the india-rubber springs; and after adjusting them he has found that the lateral motion at the leading end has been scarcely perceptible. They were engaged for a fortnight in adjusting three engines. It was understood that the permanent-way men entertained the idea that these engines were liable to put the road out of shape, and it was on that account that pains were taken to reduce the oscillation if such existed. He has had no complaint of them since they were adjusted last November. He wrote to Mr. Johnson at Derby, and produces the original letter, as follows:—

South-Western and Midland Railway Companies' Somerset and Dorset Joint Line,
Locomotive Superintendent's Office,
Highbridge, 7 December 1876.

Dear Sir,

New locomotive engines for S. and D. line.

Your $\frac{B \mid 8138}{9 \mid 522}$ of 4th December, Tuesday and Wednesday, 5th and 6th December. Mr. B. J. Fisher, L. and S. W., Mr. Colson, S. D., and myself were engaged in riding on M. R. bogie tank-engines, Nos. 6, 1,274 and 1,279.

They both expressed themselves as agreed with me to the fact that the engines could not possibly be made to run more smoothly, steadily, or with less oscillation, and that any vibratory movement perceptible was due to slacks or other inequalities, the road being in places on a very soft bottom.

First run.— On 12.30 noon, down fast train, No. 1,274, "engine first," Radstock to Blandford. Engine very steady, the side cheek springs "cushioning" round the curves most comfortably.

Second run.—On 2.10 p.m., up ordinary train, No. 6 engine, "bogie foremost," Blandford to Shepton Mallett. The riding perfect, to all appearances, even better than "engine first" on No. 1,274. No signs of vibration, and the travelling considered by us quite equal, if not superior, to first-class carriage.

Third run.—On 12.30 noon, down fast train, Bath to Templecombe, engine No. 1,279, engine foremost. Steady smooth running, no lurch or vibratory movement but what caused by slacks and soft bottom.

Mr. B. J. Fisher expressed his entire satisfaction as to the steadiness of the three engines, that they could not be made to run better, as they were as smooth in their work as any other engine that could be found.

In all this I fully concur, and I can safely say I never rode on more easy engines as these three are now running (particularly No. 6, the engine that appears exactly what is required on this line). With a good road they are faultless.

Yours truly,
Benjn. S. Fisher.

S. W. Johnson, Esq.,
Midland Railway,
Derby.

Mr. John Lane, inspector of machinery at Derby, was sent down by Mr. Johnson to the Somerset-and-Dorset line in consequence of complaints by Mr. Jacomb of the bogie-engines on the Somerset-and-Dorset line. He took the first train out of Bath for Radstock on the 13th November last. He found that 1,279 engine did roll a little. He saw Mr. Hewitt, locomotive-foreman, and arranged with him to keep her in the shed next morning, when he took the bogie from under her, and put an iron washer, half an inch thick, in addition to the india-rubber lateral springs. He accompanied her on the 15th November, and found that she ran much more steadily. As the result of that experiment, all the other bogie-engines were similarly adjusted, the lateral action having been reduced by the addition of iron washer. He tried them all after this adjustment, but 1,262 was not amongst the number, as it was under repair at Bristol at that time. No. 1,262 was similarly altered previous to leaving the shop on the 18th of December last. He has not run since on this engine. Engines of this class do not require further adjustment of this description for 12 months or more; some of them have been running for upwards of 12 months.

Mr. Joseph Lowe, superintendent of the permanent-way on the Somerset-and-Dorset joint line, reached the spot about 11.45 p.m. with the break-down gang, rather more than three hours after the accident. He brought a hand-lamp to examine the permanent-way. He found a fractured rail on the off side, about 242 yards from the wreck. He tried the gauge over the sleeper on which the fracture in the rail was, and found it a quarter of an inch easy to gauge, and the fastenings in that sleeper remained firm, the fang inside, and the dog outside. Between that point and

the next sleeper the rail had bulged, and had also got downward deflection. The fastenings were forced outwards, and the flange of the rail was forced into the timber, and the gauge was about two inches out at that point. The fastenings under the same rail in the next two sleepers were loose, and the heads were knocked off of most, if not all, of them. He noticed that the rails in front of that rail on the rame side was very much knocked out, and from six to eight rails forward were very much knocked about; and on the near side, inside the near rail, the fish-bolts were cut off, and the fish-plates stripped away. He instructed the men to change the fractured rail as soon as possible, and only to dog the fresh rail down so as not to disturb the sleepers, and in that condition it was worked over until Wednesday morning. It was plain that some wheel had dropped inside the near rail on the sleeper next in front of the fracture in the off rail, and had run along for about 160 yards in that condition about six or eight inches, more or less, from the inside rail. He did not notice that night, but he noticed next morning, that there were marks on the outside to correspond. He could only come to the conclusion that a wheel had got off the rails, but could form no idea as to how it had done so. The fracture did not present any obstruction which could have caused a wheel to leave the rail, nor was it any more than an open joint between any two rails. He was careful in having it removed so that it should remain precisely as it was after the accident. He took it to Templecombe, but does not think that it altered its shape on the journey. He took every care that it should not alter its shape. All the inspectors of permanent-way have complained to him of the rolling of the bogie engines. After the engines had been adjusted they ran very softly, and very steadily, but they have recently resumed their rolling action. Inspectors Hooper and Dewfall have both complained within the last three weeks of the road being knocked out by these engines, and that they have resumed their rolling.

Mr. Alfred Colson, the engineer of the Somerset-and-Dorset Railway, came to the spot at the same time as Mr. Lowe and others on the night of the accident; and they examined the part of the permanent-way between the fractured rail and the wreck. He saw that the fastenings were in on the sleeper at the point of fracture, and in the sleepers beyond the fracture the fastenings were loose, and the rail was pushed out of its place. He noticed on the inside and outside of the near rail, opposite to the fractured rail, that several of the heads of the fang-bolts and dog-spikes had also been broken off. He noticed the road very much out of line, and out of gauge, to the extent in some places of two inches. He could not in any way account for the accident. He is unable to form an opinion as to the cause of the accident.

James Crick, the fireman of this train, whom I examined in his bed at the hotel at Wincanton, was suffering from severe injuries and scalds. He states that he left Templecombe, and ran from that station to the scene of the accident at the usual speed, and nothing out of the way occurred until, whilst travelling —he does not know exactly at what speed, not so fast as he sometimes travels—he felt a sudden jerk, almost as if the engine had struck something, and almost directly the engine seemed to turn right round as if to go back again, and fell over. He had time to give his break-handle a few turns, and had his arm round it, to get it on tight, when he was thrown over as the engine fell. The engine was running steadily, and he did not notice anything unusual until he felt this jerk. He had been working nearly three months with that engine. Neither he nor his driver had ever made any complaint of a want of steadiness in running. He has heard of a talk as to the engine knocking the road about before he went on it, but he has never heard any particulars of it, nor any complaints about it since he has been on it. When he felt the jerk, he thought the leading wheel had struck something. She left the rails, when he felt the jerk, with the leading end. In looking ahead he could see the rail outside, and knew that they were off the road before the engine turned over. He was not aware that she was off the road before he saw the rail. He did not seem to feel any jolting before he saw the rail. It was a beautiful moonlight night. The driver shut his steam off immediately when he spoke to him, but he said nothing from the time at which they felt the jerk until he was got out from under the engine. He then asked him what was the matter, and the driver replied, "I can't hardly tell you, mate." He was able to assist in getting the driver out, and then hardly felt that he was himself injured. The engine was in good order in all respects, and he was not aware of anything being wrong with it.

James Ashford, the guard of this train, whom I examined in his house at Bath, left Bournemouth, he believes punctually at 6.10 p.m. He left Templecombe junction at 8.20 p.m., *i.e.*, 13 minutes late. He was detained waiting for the South-Western train, which was 13 minutes late in arriving at Templecombe. His train was composed of the engine, break-van, a second-class, a first-class, and two third-class carriages. He was busy with his parcels after leaving Templecombe, and did not particularly notice the speed, but thinks it was probably thirty to thirty-five miles an hour. He was riding in the van next behind the engine in the inner compartment with his parcels, when he felt the van give a lurch. He went to the break to apply it, and the van lurched, pitched forward, and then he felt himself thrown on the top of his van; afterwards he found himself in the ditch, upon his back, but does not know how he got there. He recovered sufficiently to be able to liberate the engine-driver from under the engine, when the fireman asked him to do so. The fireman himself used the shovel, and afterwards a passenger used it in his attempts to liberate the driver. He spoke to the driver, asked him how he was as soon as he was liberated, and he said, "Oh, I am bad;" that was the only word I heard him speak. His coat was burning, and one of the passengers put out the fire. Doctor Higginbotham was by him at the time; he said he was a passenger in the train.

He has had no complaints about the engine or the road. He has frequently accompanied Moorman since he has been on duty during the last two months. Moorman has driven on the late journey, Templecombe to Bath, and the early journey from Bath to Wimborne and back. He is a steady man, and goes about the same speed as other drivers. He is certain that the train was not going beyond the ordinary speed, when this accident happened; he did not notice any slackening of speed until his van was off the rails. There was no one with him in the van.

Conclusion.

The problem to be solved in this instance is that which ordinarily arises when an engine leaves the rails in the course of its journey. It is necessary, in seeking for the cause of the accident, to determine whether it is attributable to defects in the engine, or in the permanent-way, or in both. I first ascertained, from the appearances of the permanent-way and rolling-stock, from the course of the accident, and on careful consideration of all the circumstances, that the leading wheels of the engine first left the rails, and that they did so towards the off-side, in passing a spot at which the line was thrown out of adjustment, and a rail was afterwards found to be defective. That rail was much distorted, as shown in the accompanying diagram, besides being fractured through its upper table and a portion of its web, and the sleeper in advance of the fracture was marked by the flange of the engine-wheel. If the fracture and distortion found in this rail had been suddenly caused during the passage of this engine, either in consequence of any defect of the engine, or of a sudden lurch of the engine, or by reason of any weakness in the rail, from the want of its being properly supported by or secured to the

sleepers or otherwise, then the leading wheels of the engine could not so suddenly have left the rails. I had occasion specially to refer to this particular engine, No. 1262, in my report of the 9th November last (*vide* Appendix), after an inspection of the Somerset-and-Dorset railway. The engine had then been a subject of complaint (*vide* portion in italics, p. 86,) on the part of the permanent-way department, as knocking the road out of adjustment. I have enumerated in the former portion of this report such defects as were discoverable in my examination of the engine after the accident; but steps had been taken, as described in the Evidence, by reducing the lateral motion on the bogie-truck, to make the engine run more steadily; and there was, after all, nothing to account for any sudden action which could have caused the fracture and distortion of the rail referred to. I travelled on a sister engine of similar construction from Wincanton to Bath to test its action, and found that it ran very steadily, excepting when it met with unevenness in the road. I have no doubt, from the conditions of the present case, that there had been already disturbance to the permanent-way before this train approached the spot where the engine first left the rails; that the damaged rail and its fastenings to the sleepers had been partially fractured and distorted during the passage of a previous train or of previous trains; and that the leading-wheels of this engine left the rails in consequence of such a previously damaged condition of the permanent-way. The damage may have been, and was doubtless increased by the passage of this engine, but not from any defect in the engine. In any case, there is no reasonable mode of accounting for the accident if the rail had not previously been partially bent and broken; and, such having been the case, the results afterwards found may be easily accounted for.

The conclusion that the permanent-way and not the engine must be blamed for this accident having been arrived at, the consideration which in these circumstances next presents itself is, whether the damage thus caused to the permanent-way was the consequence of inherent weakness or of defective maintenance. In reporting on the 90 miles of the Somerset-and-Dorset Railway, after inspection of it, on the 4th, 6th, and 7th November last, I had occasion to point out (italics, p. 86), that this particular portion of it had been relaid with new materials, but, like most other parts of the line, was much in want of ballast. Since that time a quantity of broken-stone ballast has been added, but further adjustment was still required, as I observed in walking along the permanent-way north and south of the site of this accident; and the rails and fastenings were the more likely to have suffered after being previously employed for so long a period, and under heavy engines, without a proper supply of ballast to enable the line to be maintained in proper condition. This was not a part of the line to which those who were in charge of it, and were engaged in works of improvement, would naturally have looked with the greatest anxiety, or on which such an accident was most to be feared. But the permanent-way on this section cannot be considered sufficiently strong for the engines employed, and especially when the trains are run over it at high speed. Security, as I have frequently had occasion to observe, is in these matters a question of margin. In order that a reasonable degree of safety may in the working of the line be preserved under all conditions, and in all seasons, from day to day, from month to month, and from year to year, it is necessary, not merely that the permanent-way should be strong enough actually to carry the traffic, but that there should also be beyond that point a very considerable margin of strength and stability; and it cannot fairly be considered that the margin so required is in this case afforded. The gradients of the line being steep, heavy engines are required for the conduct of the traffic; and for the same reason, as the average speed cannot be maintained, on the up-hill portions of the journey, the engine-drivers are compelled, in order to keep time, to run at comparatively high speeds on descending gradients or more level portions. Diagrams of three types of engines employed on the line are annexed. The weight on the driving-wheels of the engine which left the rails on this occasion was 14 tons 12 cwt.; but the weight on the driving-wheels of another tank-engine employed on the line, as will be seen by the diagram enclosed, is as much as 16 tons 12 cwt. as a maximum. In order that the margin so necessary to safety, above referred to, may be preserved, such engines require a very strong permanent-way; and the lesson mainly to be derived from this accident, is not merely that the most careful maintenance of the permanent-way, and moderate speed in the trains, are meanwhile necessary; but also, and still more, that a stronger permanent-way is required for the heavy engines which are employed in the working of the traffic.

I have, &c.,

H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

APPENDIX.

13, *Downing Street, London,*
9th November 1876.

Sir,

I have the honour to report, for the information of the Board of Trade, that in compliance with the terms of your minute of the 1st inst., I have made a general inspection of the permanent-way of the Somerset-and-Dorset Railway.

The railway in question passed into the hands of the Midland and London-and-South-Western Railway Companies a year ago, namely, in November 1875, and this arrangement was legalised by an Act of Parliament which received the Royal assent on the 13th of last July.

There can be no doubt that when the two Companies took possession of the Somerset-and-Dorset Railway in November 1875, the permanent-way was in very bad condition. Mr. Jacomb, the engineer of the South-Western Railway, was then appointed chief-engineer of the joint-committee, and I enclose herewith a statement furnished by him of the materials supplied from 1st November 1875 to the 31st October 1876, or ordered for immediate delivery on the 21st September last. I also enclose a letter from him describing the improvements which he proposes to carry out, and a letter which he forwards from his assistant-engineer for the district, Mr. Colson, as to the means which are being adopted for ballasting the line.

In making this inspection I walked over some portions, and rode over other portions on a platelayer's trolly, but I rode over the greater part of the line on the buffer-plank of a special engine. This arrangement, though somewhat inconvenient, with a very cold wind blowing, was necessary, because, strange to say, the South-Western Company do not apparently possess any vehicle which conld be made to serve the purpose of an inspection-carriage.

4th November.

At the Wimborne junction between the London-and-South-Western main line and the Somerset-and-Dorset Railway the permanent-way was very bad. The rails, points, and crossings especially required to be immediately renewed. I was informed that this was to be done in a few days, and the whole was to be relayed with new materials for a distance of 20 chains. At the end of that distance half a mile had been relaid within four months with new rails, sleepers, and fastenings. For 3½ miles to the Bailey-Gate level-crossing repairs or renewals were much required. Many rails were very bad, and many sleepers were much worn by the chairs (of which the bottoms are small) working into them, and some of the sleepers were decayed. The bracket-plates employed to secure the joints of the rails were not fitted or adapted for them, and the joints of the rails were very bad in consequence. Many of these brackets were broken. Fish-plates have, I understand, been ordered in substitution for these bracket-plates, and orders have also been given by the engineer to renew the defective parts of the line. For one mile and a quarter, from the Bailey-

Gate crossing to the Bailey Gate-station, the road is better, and improvements in the nature of ordinary repairs only are required, but ballast is more or less wanted over the whole distance, and very much so in some places. *The inspector on this portion of the line stated that engines Nos* 1,262 *and* 1,263 *had especially been remarkable for knocking the line out of adjustment.*

Between Bailey-Gate and Blandford a good many keys were out, and some were in bad condition. Some spikes were broken off, and in some cases they had never been put in. At the site of the recent accident referred to by Mr. Chandler, where a Midland break-van running in a passenger-train left the rails, a great many new sleepers had been inserted since the accident, and many more required to be renewed. Ballast was wanted more or less along the whole distance. Forward from this locality there were a few bad rails and sleepers, but the *top* was better, and fewer repairs were required. The hand-rail and planking of the Blandford River Bridge wanted repairs, and the road on each side of it wanted adjustment badly. At Blandford there were some points and crossings in defective condition and new ones were ready for insertion. For one mile and six chains from Blandford towards Shillingstone the present bad road is to be renewed with the South-Western standard rail, double-headed, and weighing 75 lbs. to the lineal yard, and all new materials. The materials for the purpose have, I learn, been partly supplied, and the work will be taken in hand as early as possible. In the present road dog-spikes are used for fastenings, except at the joints, where fang-bolts are employed. More ballast is wanted on this portion of the line. The next mile and a half of double-headed road is to be re-sleepered as far as required, and new rails are to be inserted in some places, there being a good many split or broken sleepers at present. The rails of the section referred to are fish-plated throughout. There is next one mile and a quarter of road relaid with new Vignoles' rails, weighing 68 lbs. per yard, on cross-sleepers, nine to a 24-ft. rail, with fang-bolts and clips. The old road then again occurs, and is in bad condition, as regards both rails and sleepers as well as brackets and joints. It is to be immediately relaid as far as Shillingstone. Drainage is required at certain places, and more ballast is also wanted.

6th November.

The road between Shillingstone and Sturminster is very defective in regard to rails and sleepers, joints and brackets, as well as want of ballast. Some renewing is to be done here, but no portion has been specified. At and on both sides of the Sturminster station a quarter of a mile of road has been relaid and then the old road is found again. It is bad in every particular, the ballast especially being utterly inefficient, consisting as it does in great part of big stones only. These remarks apply as far as Templecombe, *where* 5½ *miles of road is new, composed of Vignoles' rails, weighing* 68 *lbs. per lineal yard, on square creosoted sleepers with fish-plates, fang-fastenings, and clips. Ballast, even in the new road, is much wanted, some parts having scarcely any. A few of the new rails are failing, and the road wants adjustment.* The old cross-sleeper road, which occurs again and extends to Evercreech junction, is in a very low state, ballast being always scanty and sometimes absent. Very little ballasting has been done during the last 12 months, but extensive arrangements have now, I learn, been made for supplying it. The curves require adjustment, and it is impossible to keep them true without proper ballast. Better drainage is also required. A portion of this section has been re-sleepered, but there is much more to be done in that respect.

Passing at the Evercreech junction of the Bath and Highbridge lines to the latter line, it is the old road laid with bridge-rails on longitudinal-timbers, and it is proposed to relay it at once from Evercreech towards Glastonbury with Vignoles' steel rails, weighing 68 lbs. per yard. I learn that 4½ miles of materials are about to be supplied for this purpose, and that a fresh contract for a further distance will at once be entered into. Between West-Pennard and Glastonbury half a mile of road has been relaid with 68 lbs. Vignoles' rails on cross-sleepers, but there is no proper ballast; and between Edington and Bason-Bridge a similar length has been relaid in the same manner, also without proper ballast. The remainder of the road to Highbridge abounds with defective rails and timbers, being particularly bad near Glastonbury; and it is in need of thorough renewal. Ballast also is quite insufficient throughout.

I did not go over the short branch from Glastonbury to Wells, but this is admittedly in a similar condition to the line between Evercreech and Highbridge; and the same remarks may therefore be taken to apply to it, the whole requiring renewal.

The branch from Highbridge to Burnham I have already walked over and condemned in a former report, and it is now being relaid.

7th November.

The extension line from Evercreech junction to Bath was opened two years ago, after some delay, in consequence of the imperfect manner in which the railway had been constructed, and some of the defects which were then pointed out still existed at the time of my recent inspection. There is an entire absence of proper ballasting from Evercreech to Bath, the rails require to be bent to the curves in nearly all cases, and the slips want better treatment.

The road is laid with Vignoles' rails, weighing 75 lbs. per lineal yard, on cross-sleepers. There is a very large number of bad rails as well as other defects, such as those above referred to, and the line is in need of most extensive repairs, which should be promptly undertaken. I understand that materials for this purpose are being supplied. The arch of a bridge at Foxcote wants strengthening, and it should be done without delay. The Combe-Down tunnel should be better ballasted, and the broken or otherwise defective sleepers there and elsewhere renewed.

As the general result of the inspection, the condition of the line may thus be summed up:

Much has been or is being done to remedy the very bad condition in which it was, apparently, taken over by the joint committee of the two companies a year ago, but very much is still required. The task imposed upon the engineers of the joint committee has been and still is most arduous and responsible. There are still very numerous cases of damaged or worn out rails, and of decayed, defective, split, or broken sleepers, which ought to be immediately renewed; the joints of the rails are much in want of improvement, and, whilst some portions are almost devoid of proper material for ballast, there is no part of the line on which ballast is not more or less required. It is of course very difficult, and indeed almost impossible, under such conditions, for those who are in immediate charge of the permanent-way to maintain it in good line or level, or to keep the curves in a proper state of adjustment. It would be an endless task to note or report all the defects that exist when 90 miles of railway are so much in want of improvement. But the above description will, I think, afford a fair general idea of the condition of the permanent-way. I observed that the trains were travelling faster over the line than was in these circumstances desirable, and I can only recommend, in conclusion, that moderate speeds and engines of the steadiest construction only should be employed, until the whole line shall be in a safe and satisfactory condition for passenger traffic.

I have, &c.,

H. W. Tyler.

The Assistant Secretary,
(Railway Department,)
Board of Trade.

Printed copies of the above report were sent to the Somerset and Dorset Railway Company on the 20th March.

SOUTH-EASTERN RAILWAY.

Board of Trade,
(*Railway Department,*)
13, *Downing Street,*
29*th January* 1877.

Sir,

In compliance with the instructions contained in the Order of the 24th inst., I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances connected with the collision that occurred on the 22nd inst. near the Charing-Cross station on the South-Eastern Railway.

In this case the 11·30 p.m. passenger-train from Charing-Cross for Greenwich came into collision, in leaving the Charing-Cross station, with a train of empty carriages which was being shunted back into the passenger-station. Two of the carriages in the empty train were destroyed, and several others more or less damaged; but no damage was done to the engine or any of the vehicles in the Greenwich train, excepting that a buffer was knocked off the engine. One passenger complained of injury. No servants of the Company were injured.

Description.

The signals and points at the entrance to the Charing-Cross station are worked from a cabin on a bridge about five and twenty yards from the end of the passenger platforms. The four lines of rails on the Charing-Cross bridge diverge into seven lines at the station, but the only one of those lines to which it is necessary specially to refer in this report is the easternmost line, used for Cannon-Street and Greenwich local traffic; and the signals to be particularly referred to are the semaphore-signal above the cabin applying to the exit of the trains from that line, and the shunting signals on the other (south) side of the cabin applying to trains shunting back from the down main-line into the station. There are, in addition to the numerous semaphore-signals over the cabin, six shunting disc-signals on the north side and four on the south side of the cabin. These shunting-signals were applied to the cabin subsequently to the opening of the line, as a further precaution in the working of the traffic, to be used in place of hand-signals, and they have never been interlocked with the levers for working the points and the semaphore-signals.

The Greenwich train in question consisted of a tank-engine and 10 carriages, of which two—one at each end—were break-carriages. It left Charing-Cross punctually at 11·30 p.m.

Evidence.

The engine-driver, *Walter Denyer*, was standing on his engine at the platform when he received a signal from the guard to start in the usual way, and he saw the semaphore-signal on the cabin lowered for him to start. He opened his regulator, and was proceeding out towards the main-line, when an engine-driver standing on an engine on No. 3 road shouted out, "Hold on." He turned round to ascertain whether it was addressed to him, and he had hardly done so when the collision occurred. He saw after the collision that there had been lamps—which were still burning—on the break-carriage at the tail of the carriages with which he came into collision. He had run 80 yards before the collision took place.

The fireman, *Benjamin Mallett*, confirms the evidence of his engine-driver. He looked round at the same time as his mate to see who was calling, and saw nothing of the empty carriage-train until his engine struck it.

The head-guard, *Stephen Cook*, got into his van as the train started, exchanged signals by means of hand-lamps with the under-guard, who was riding in he front of the train, and had just commenced to look out on the other side of the train to see that all was right with it, when he felt the shock.

The under-guard, *Jesse Bullock*, who rode in the break-carriage next behind the engine, received the signal to start from the inspector on the platform, and gave the driver the signal to start as usual. He exchanged signals with the head-guard at the tail end of the train, and was about to look out on the other side when he felt the shock of the collision.

The empty train with which the Greenwich train thus came into collision consisted of an engine and tender and 16 carriages, including 4 break-carriages.

The engine-driver, *Joseph Porritt*, was directed, about 11.25 or 11.26, by Benjamin Willes, the shunter, to leave No. 2 road, and to pull out to let the engine out from behind the train. He whistled for a signal from the cabin, which was duly lowered, to allow him to go out on the down-main-line. He drew his train out upon that main-line clear of the signal-cabin, and when he had been standing a minute and a half or two minutes with his whole train on the south of the cabin, he received a signal from the cabin, and from the shunter by a hand-lamp, to set back, and he expected to be turned back into No. 2 road. He began to push his train back, and was not aware till the collision occurred that his train was being turned back into No. 1, or the Greenwich line, in place of into No. 2 line, which was empty, and into which he might have gone back with safety.

The fireman, *Charles Town*, after hearing the evidence of his engine-driver, states that it is quite correct, and that he has nothing to add to it. He knew that his train ought to have gone back on to No. 2 road, and he was not aware that it was being turned back into No. 1 road until he felt the collision.

The shunter, *Benjamin Willes*, instructed engine-driver Porritt to leave No. 2 line at the station in order to enable the engine behind the train to get out. He rode forward, as the train moved out of the station, on the break-carriage at the tail of the train, and he waited outside of the signal-cabin until he saw a signal taken off on the cabin to allow the train to set back. On seeing the signal on the cabin turned from red to white, he used his hand-lamp, and waved to the engine-driver to set back into the station. He was again riding on the break-carriage when he noticed in setting back that his train was turned into No. 1 in place of No. 2 line. He whistled, and turned a red light from his hand-lamp towards the engine-driver, and then jumped off to avoid the shock of the collision. The train was set back at the usual speed of about four or five miles an hour.

The yard-foreman at the Charing-Cross station, *William Henry Verco*, was standing underneath the signal-cabin at 11·25, and called out to the signalman in the cabin to shunt the train off No. 2,—*i.e.*, to pull the train out from No. 2 line, in order to release the engine which was behind it, and to allow that engine to go to Cannon Street; and the signalman replied, "All right." He then sent Willes and Rawlinson, two shunters, to superintend the operation. He saw the empty carriage-train pull out from No. 2 line, and the engine follow it, and then saw the engine go back on No. 3 line, so as to clear the way for the empty carriage-train to be set back on to No. 2 line. He then walked away along the platform, to make up the morning parliamentary train, and afterwards heard the collision. He heard the driver of the Greenwich train whistle up to start, but he did not notice that the empty carriage-train had been sent forward on the down road. It ought to have gone forward on the

up-road, and not on the down-road, in shunting out of the station, because there was nothing due on the up-road at that time.

The signalman on duty in the Charing-Cross cabin on the evening in question, *William Pattenden*, had been in training in that cabin since the 16th November, and had also been taught the various parts of the yard and the working of the station, and since the 3rd of January he had been spending his time altogether in the signal-cabin, in order thoroughly to qualify himself for the duties to be performed in it. He took charge of the cabin for the first time on the night in question. There was nobody else with him in the cabin but a telegraph-boy, Thomas Wyles. The yard-foreman, Vercoe, told him about 11·25 to shunt the empty-carriage-train out of No. 2 line, for the purpose of releasing the engine which was behind it, and which was wanted to go to Cannon Street. He, therefore, let this train out from No. 2 line, but turned it on to the down-road in mistake, intending to have sent it out on to the up-road, and the engine after following it out set back into No. 3 road. He pulled over the points to allow that engine to go back, which it did, and stood in No. 3 road. He then, thinking the empty train had gone out on the up-road, pulled off the shunting-signal to allow it to set back, as he thought, into No. 2 road, but he pulled off the the down-road-signal, again in mistake, and it applied to the train which had gone out on the down-road. At the same time the driver of the 11·30 p.m. Greenwich train opened his whistle to give notice that he wanted to start, and he set the points and lowered the signal for that train to leave the station. He thus allowed the two trains—the one setting back and the other starting from the station—to come into collision with one another. He has been seven years altogether in the Company's service, and five and a half years a signalman; and he has acted as relieving signalman at many stations on the line. He cannot account for having made the two mistakes which led to the collision, as he felt perfectly at home in the box, and competent to perform the duties.

Conclusion.

This collision has, then, occurred in consequence of two mistakes, which are frankly admitted, by the signalman, during the first evening that he had taken charge of the signal-cabin. This signalman was experienced in the working of other cabins, and had been taken considerable pains with, and might fairly have been considered competent, as he thought himself, for taking charge of the Charing-Cross cabin, especially in doing duty at a time when there was comparatively little traffic. It is singular, however, that he should have made these two mistakes, first in turning the empty-carriage-train out on to the down instead of the up main-line; and, secondly, in taking off the down-line shunting-signal, in order to allow it to set back, as he thought, from the up-line into the station. He is evidently an intelligent man, and is sorry for his mistakes, which will be a lesson to him that he is not likely to forget in his future working.

It is important in all cases of this description to consider whether by any possibility such mistakes, or the evil effects of them, can be provided against. And, looking at the subject from this point of view, it would be wise on the part of the Company to provide the means, which would appear to be quite feasible, of so inter-locking the levers for working the shunting and the train signals with one another, as to prevent a signalman from lowering them both at the same time, in cases in which they are liable to lead to collision.

I have, &c.,
H. W. Tyler.

The Secretary,
(*Railway Department*),
Board of Trade.

Printed copies of the above report were sent to the Company on the 26th February.

HARRISON'S LEVEL CROSSING.

RETURN to an Order of the Honourable The House of Commons, dated 17 May 1877;—*for*,

COPY "of a REPORT to the BOARD of TRADE by Colonel *Rich*, on the ACCIDENT which occurred at HARRISON'S LEVEL CROSSING on the LANCASHIRE AND YORKSHIRE RAILWAY on the 11th March 1877, and CORRESPONDENCE connected therewith."

Board of Trade, 17 May 1877.

EDWARD STANHOPE.

REPORT to the Board of Trade by Colonel *Rich*.

Railway Department, Board of Trade,
2 May 1877.

Sir,

I HAVE the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances which attended the accident that occurred on the 11th March at Harrison's Level Crossing on the Lancashire and Yorkshire Railway, in the town of Blackburn.

At about half-past six in the morning, a woman named Elizabeth Bradley, who was about 37 years of age, and who was out of her mind, was injured, and found on the railway about 60 yards to the west of the level crossing in question. Her skull was fractured, and she was insensible. She died in the infirmary at Blackburn about nine days afterwards.

This accident having been brought to the notice of the Board of Trade by Mr. Briggs, the Member of Parliament for Blackburn, I informed him of the time when I should investigate the matter, and I was met at the level crossing in question by the mayor, Mr. Hornby, and some other members of the town council; Mr. Bryan, the borough engineer for Blackburn; Mr. Potts, the chief constable; and several other gentlemen who represented the local residents. Mr. Pilkington, one of the directors, and several officers representing the Lancashire and Yorkshire Railway Company.

After having examined the locality, and the plan for doing away with the level crossing in question, in accordance with an Act obtained by the company in 1873, the inquiry was adjourned to the Town Hall, at the request of the mayor. Two delegates, Mr. John Stone Hargreaves and Mr. James Taylor, who had been foreman to three or four coroners' juries which sat on deaths which had occurred at Harrison's Crossing, were chosen by the residents to represent them at the inquiry, and attended at the Town Hall accordingly.

A statement was put in by the town clerk showing that five fatal accidents had occurred at this crossing since November 1869, and he stated that numerous other parties had been more or less injured.

He also put in the following return, taken on the 26th ultimo, of the number of persons who had used the crossing during the 24 hours of that day; viz.:—2,786 foot passengers; about 550 of these had used it between 12.0 noon and 2.0 p.m.; about 670 between 5.0 p.m. and 7.0 p.m.; and about 400 between 5.0 a.m. and 6.0 a.m.; 72 conveyances passed over the railway at the crossing during the same day, and 147 trains passed over the crossing along the railway. He also represented that the crossing was badly protected, there being only one man kept there, who lives in the house belonging to the company at the crossing. This man locks the gates about half-past eight at night, and opens them at half-past six in the morning, but the wicket-gates are left open for foot passengers during the day and night. If there are any conveyances that require to cross during the night, the gatekeeper gets up on being roused by the parties wanting to cross.

The

The gates close across the road, but they are not large enough to close across the railway.

The railway is straight, and there is a good view along the line for 500 yards on each side the crossing. The ground adjacent to the railway is laid out for streets, the greater part of which are already lined with houses, and the remainder will probably soon be covered with shops and houses for the working classes.

There is a bridge over the railway carrying a public road about 613 yards to the east of the crossing, and one under the railway about 448 yards to the west of the crossing.

The railway is the main line from Blackburn to Preston. It was opened for passenger traffic about the year 1846 or 1847.

In 1873 the Company in their Parliamentary Omnibus Bill, took powers for obtaining land and constructing an under bridge at the west side of Harrison's Level Crossing, and for closing this public crossing. These powers lapsed in 1876, and nothing has been done.

The Mayor and persons interested in the matter on the part of the public, would be satisfied if the works which were then proposed were carried out, and it seems to me very desirable that this should be done as early as possible, as the longer it is deferred the more difficulty and expense there will be in obtaining the land for the purpose. I think the company should construct the approaches and the bridges under the line; and that the corporation, or the owner of the property, should carry out the small works necessary to connect the present streets with the new road to the under bridge.

As regards the unfortunate woman who was killed on the present occasion, it seems that she left her friends at Church Parish, about four miles from the scene of the accident, about six o'clock on the previous evening, and it is supposed that she was making her way to some friend's house at Mill Hill.

The most direct route for her to proceed to Mill Hill was by Harrison's Level Crossing, and her road thence to Mill Hill was a little shorter along the railway than by the high road. Whether she was a wilful trespasser on the railway or not, has not been ascertained.

The first marks of the woman's blood were found about 30 yards west of the level crossing, on the up line from Preston to Blackburn. They extended thence across the railway to the door of a hut on the south side of the line, and thence along the down line for 30 yards to where she was found at half-past six the following morning, lying in the west ditch at the side of the line, 60 yards west of the level crossing.

I have &c.
(signed) *F. H. Rich,* Colonel, R.E.

The Assistant Secretary,
Railway Department.

Board of Trade to the Secretary of the Lancashire and Yorkshire Railway Company.

Board of Trade, Railway Department,
Sir, 7 May 1877.

I AM directed by the Board of Trade to transmit to you, for the information of the Directors of the Lancashire and Yorkshire Railway Company, the enclosed copy of Colonel Rich's report of his inquiry into the circumstances attending the fatal accident which occurred at Harrison's Level Crossing on the Lancashire and Yorkshire Railway.

I am at the same time to request that the Board of Trade may be informed whether it is the intention of the Directors to apply to Parliament for an extension of time for carrying out the works referred to by Colonel Rich, in order that this dangerous level crossing may be done away with.

I am to add, that the Board of Trade purpose to lay the report in question, and the reply which they may receive from you, before Parliament.

I am, &c.
(signed) *Henry G. Calcraft.*

The Secretary
of the Lancashire and Yorkshire Railway Company.

Secretary of the Lancashire and Yorkshire Railway Company to the Board of Trade.

Lancashire and Yorkshire Railway,
Secretary's Office, Manchester,
16 May 1877.

Sir,

I HAVE submitted to the Directors of this company your communication of the 7th inst., with copy of the report from Colonel Rich accompanying it of his inquiry into the circumstances attending the fatal accident which occurred at Harrison's Level Crossing on this company's line, near Blackburn, on 11th March last, to Elizabeth Bradley. In reply, I am directed to state that the crossing in question was provided by arrangement with the landowner, when the line was constructed, as a field-occupation crossing; the town, however, has since extended considerably in that direction, and streets have been made leading to the crossing. Owing to the consequent increase of road traffic, the company, some time ago, though not under any legal obligation to do so, built a gatehouse, and appointed a man to attend to the gates as stated in Colonel Rich's report.

In 1873, the company obtained an Act of Parliament, containing permissive powers to substitute a bridge for this level crossing, and subsequently entered into negotiations for the purchase of the necessary land, but found when the price asked was added to the estimated cost of the works, the total expense would be upwards of 7,000 *l.* With this estimate before them, and bearing in mind that the company was under no legal obligation to construct the bridge in question, and especially that the desirableness of abolishing the level crossing arose, not merely from the use of the railway, but from the public having adopted the use of it for their own convenience, the directors thought that the Corporation of Blackburn, as representing the public, might fairly be asked to contribute towards the construction of the bridge and approaches, an application was accordingly made to the Corporation; copy of which, and the reply to it, are as follows, viz:—

"LANCASHIRE AND YORKSHIRE RAILWAY.

"Dear Sir, "Hunts Bank, Manchester, 12 April 1876.

"IN the Session of Parliament 1873, this company obtained Parliamentary powers to make a bridge underneath the Blackburn and Preston section of their railway within the borough of Blackburn, and when made they have power to stop up Harrison's Level Crossing, both of which are shown upon the enclosed tracing, copied from the Parliamentary plan. The directors have had estimates made of the probable cost of the work, and find it is so serious (about 7.200 *l.*), that the object to be gained does not justify so large an expenditure, and they hesitate to incur it, unless they can obtain a contribution from the corporation of Blackburn towards the object, and I am requested to lay the matter before them with this view. The grounds upon which the directors seek to ask such assistance is that the corporation having the control of matters within the borough for the safety of the public, and the work referred to being executed for the public safety, the directors hope that the corporation will consider the matter in a favourable light, and let them know to what extent they will be disposed to meet the company in the expenditure.

"I remain, &c.
(signed) "*Samuel Burgess*,"

"W. E. S. Gaine, Esq.,
"Town Clerk."

"BLACKBURN.

"*Re* Harrison's Crossing.

"Dear Sir, "Blackburn, 25 April 1876.

"I HAVE submitted your letter of the 12th instant to the Highway Committee of this corporation, and I am desired by the committee to inform you that the committee while of opinion that it is most desirable that the work referred to therein should be executed, do not see their way to recommend the corporation to contribute towards the cost of same.

"I remain, &c.
(signed) "*Wm. E. S. Gaine*,
Town Clerk."

"S. Burgess, Esq.,
"Lancashire and Yorkshire Railway,
"Manchester."

Since the failure of these negotiations with the corporation, nothing further has been done in the matter.

With regard to the question as to whether the directors of the company intend to apply for further Parliamentary powers with respect to this level crossing, I am desired to say that the Board would most willingly adopt this course in conjunction with the corporation of Blackburn as, whilst fully recognising their own position in the matter, they do think that there is just claim upon the corporation to contribute towards the cost of substituting a bridge with the necessary approaches at the place in question.

As you say that the Board of Trade proposes to lay Colonel Rich's report, and this reply, before Parliament, my directors trust they may be excused for expressing an opinion that it is a great hardship on railway companies to be called upon to expend large sums of money in abolishing level crossings on their railways already sanctioned by Parliament, and the inconvenience of which has arisen from other circumstances than those of the use of the line, and they venture to express a hope that Parliament will see fit to pass some general Act by which, in cases where found desirable that costly works shall be executed for the purpose of meeting the public convenience and security, by substituting bridges for level crossings, the expense should be fairly apportioned between the railway companies and the public authorities according to the circumstances of each case, and the decision of some disinterested tribunal.

I am, &c.
(signed) *J. H. Stafford*,
Secretary.

The Assistant Secretary,
Railway Department, Board of Trade.

HARRISON'S LEVEL CROSSING.

COPY of a REPORT to the BOARD of TRADE by Colonel *Rich*, on the ACCIDENT which occurred at HARRISON'S LEVEL CROSSING on the LANCASHIRE AND YORKSHIRE RAILWAY on the 11th March 1877, and CORRESPONDENCE connected therewith.

(*Mr. Edward Stanhope.*)

Ordered, by The House of Commons, *to be Printed,*
17 *May* 1877.

221.

Under 1 *oz.*

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THE REPORT OF THE COURT OF INQUIRY,

HELD IN PURSUANCE OF AN ORDER OF THE BOARD OF TRADE,
DATED THE 9TH AUGUST 1876,

INTO THE CIRCUMSTANCES ATTENDING THE COLLISION ON THE

SOMERSET AND DORSET RAILWAY

WHICH OCCURRED NEAR

RADSTOCK

On the 7th August 1876.

Presented to both Houses of Parliament by Command of Her Majesty.

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1876.

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To accompany Report of Court of Inquiry Dated 7th Sept. 1876

SKETCH

— OF THE —

SOMERSET & DORSET RY.



PLATE Nº I.

To accompany report of Court of Inquiry dated 7th Sept. 1876



THE REPORT OF THE COURT OF INQUIRY.

HELD IN PURSUANCE OF AN ORDER OF THE BOARD OF TRADE, DATED THE 9TH AUGUST 1876, INTO THE CIRCUMSTANCES ATTENDING THE

Collision on the Somerset and Dorset Railway which occurred near Radstock on the 7th August 1876.

Board of Trade,
(Railway Department,)
Whitehall, 7th September 1876.

SIR,

IN compliance with the instructions contained in the Order of the 9th ultimo, I have now the honour to report, for the information of the Board of Trade, the result of the public inquiry into the circumstances which attended the collision that occurred on the 7th of August, at 247 yards on the north of the Foxcote signal-cabin, about a mile from the Radstock station on the Somerset and Dorset Railway.

This inquiry was held under the Regulation of Railways Act, 1871, with the assistance, as legal assessor, of Mr. W. W. Ravenhill, barrister-at-law, at Bath, in the Guildhall, which the Mayor and Corporation of that city were good enough to place at our disposal. The Court held six sittings, and examined 42 witnesses, who were, with two exceptions, officers or servants of the Company, and their depositions are printed herewith, as well as short portions of evidence given by two of them, Mr. Difford and Mr. Percy, before the Coroner.

I also sat as assessor to the Coroner, having been appointed by the Board of Trade on his application, and made a statement in his Court on the depositions taken by him.

This collision occurred on a single line of railway, between two passenger-trains,—a down-special-train from Bath for Radstock, and an up-relief-train, running special, from Bournemouth for Bath,—whilst travelling between Wellow and Foxcote in opposite directions. Twelve passengers and the head-guard of the down-train were killed, and 28 passengers and six servants of the Company were more or less seriously injured.

The Somerset and Dorset Railway is laid throughout with a single line only. On the 31st of July last a Bill received the Royal Assent under which it became leased by the Somerset-and-Dorset Railway Company to the Midland and London-and-South-Western Railway Companies jointly. It has been worked for some months past under a Joint-Committee of these two last-mentioned Companies, but with the same local management as before.

The collision occurred on the extension line from Evercreech to Bath, which was opened in July 1874, with an undertaking, as to the mode of working, which will be found referred to in the evidence, and is printed as an Appendix (A.) to this Report. In May 1875, a new signal-cabin, called the Foxcote cabin, established by the Somerset-and-Dorset Railway Company, was sanctioned by the Board of Trade, on the section between Radstock and Wellow, to control a colliery-siding. This cabin, about one mile north of the former, and rather less than three miles south of the latter station, is provided with levers for working the usual out-door signals and the points of the colliery-siding, as well as with block-telegraph-instruments, and a telegraph speaking-instrument for communication on the circuit from Glastonbury to Bath.

Evidence.

Mr. Harry Chapman, engineer of the Somerset and Dorset Railway (sworn).—I put in a plan of the Somerset and Dorset Railway between Radstock and Wellow, a distance of 3 miles and 70 chains. There is an intermediate signal-cabin, called Foxcote, at the Braysdown colliery-siding, about one mile from Radstock, and rather less than three miles from Wellow. The train from Radstock was proceeding up a gradient of 1 in 198, and the train from Wellow was running down that gradient. The length of that gradient is rather less than 30 chains. There is a curve of 30 chains radius, about 20 chains long. At the Foxcote signal-cabin there is Saxby and Farmer's patent locking-apparatus, and there are telegraph instruments supplied by Maunders & Co. The point of collision was 67 yards on the Bath side of the home-signal on the same side of the cabin, and 611 yards inside the distant-signal. The first sight of the home-signal north of Foxcote is at 1,423 yards for 20 yards; the second sight is at 1,168 yards for 20 yards; the third and uninterrupted sight is at 360 yards. The distant-signal is only visible for 317 yards. The point of collision is 611 yards within the distant-signal, and 928 yards from where the driver could have seen that signal if it had been lighted. The point of collision was 67 yards outside the home-signal, and was between the home and distant signals. The drivers of the trains approaching each other would have seen each other at 200 yards.

Mr. Alfred Colson (sworn).—I am assistant engineer on the Somerset and Dorset Railway, and prepared the diagram put in, being a plan of the site of the Radstock accident. Towards Bath there is a home-signal 180 yards, and a distant-signal 858 yards, from the Foxcote cabin. Towards Radstock there is a home-signal 221 yards, and a distant-signal 888 yards, from the cabin. The curve on which the collision occurred has a radius of about 30 chains. I put in a plan of the telegraph office at Glastonbury, which is 15 ft. by 12 ft. 3 in. The only room having communication with the office is a small lumber-room on the south of it. The plat-

form between the telegraph office and the rails is 12 ft. wide. The telegraph office is at the south of the station building, with the exception of a small cloak room. On the north of it there are the inspector's office, the booking office, and the waiting-rooms. There is a sliding panel at the north-west corner, between inspector Wood's office and the telegraph office; it is about 18 inches square. The front door has no sliding panel. The plan is to scale, excepting in regard to the width of the platform.

Mr. Abraham Difford (sworn).—I am superintendent of the Somerset and Dorset Railway, and have had the management of the train service for about 14 years. The change in the ownership, by its passing into the hands of the Midland and South-Western Railway Companies,—on the 13th of July of this year, the date of the Royal assent to the Bill,—has not affected my position. I have had no fresh instructions from anybody. The part of the railway where the accident occurred was opened in July 1874. Since then the Foxcote signal-cabin has been erected, and it was opened for traffic on the 24th May 1875, when the colliery siding was also ready for opening, and was opened at the same time. I put in the general regulations for working the Somerset and Dorset single line. The instructions in the little paper produced, containing instructions for working the single line by block-telegraph, are the same as those exhibited in the signal-cabins on a larger scale. They were issued in this form in July 1874, having been in operation since 1864, and having been in use ever since. A larger board put in contains only instructions regarding the working of the telegraph instruments, with the exception of one paragraph, No. 30, which relates to single-line working, and also paragraph 9, which describes the prefixes to be attached to different messages. Paragraph 30 applies to the whole line, and is devised to keep the crossing agent at Glastonbury informed by station agents of the running of the trains, so that he might know how to deal with the crossing places. I saw both of the instruction boards referred to hanging in the Foxcote signal-cabin on the day following the accident in question. Rules 1 to 14, and the remainder of the instructions (read) apply to Radstock and Wellow, and in a degree to Foxcote, but that not being a crossing-place, some of the other rules cannot apply. The Foxcote signal-cabin has been inserted since the rules were drawn up; but before then stations, not crossing-places, Spetisbury, Masbury, and other stations, including three junctions, existed. Windsor Hill, and Foxcote are the only places on the Bath and Evercreech line neither crossing-places nor stations; and they have been erected since the opening of the line, and since the rules were drawn up. The Foxcote signal-cabin was established to control the Braysdown colliery siding. The signalman's duty there would be to give "line-clear" to one of the stations, provided his siding was clear, and his points and signals were right, and he had not given "line clear" to a train in the opposite direction. He has the usual instruments of a station, two block-telegraph instruments, one to Radstock and one to Wellow, and a speaking instrument, but I am not certain with what places it is in comumnication. There are home and distant signals in each direction at Foxcote. They ought to have been lighted on the night of the accident, but I do not know that they were. The instructions about communicating with the crossing agent would not apply to Foxcote as it is not a crossing-place. The Foxcote signalman acts on his own motion without such instructions from the crossing agent. All he has to do is to receive "line clear" for trains, and then pass them on. If trains are out of course or not in the working time table, a station-master can send them forward without an order from the crossing agent, if he had "line clear" from the station beyond, and there was no train due in the opposite direction. The security would rest in the block telegraph from Foxcote that there was no train coming from that direction. When the station-master at Radstock sends a train forward towards Wellow, he communicates, not necessarily with Wellow, but with Foxcote, and obtains "line clear" from there only. Wellow could only send a train forward after communication with the Foxcote signalman, and that man's duty would be not to do so if he had already a train coming from Radstock. I rely upon the signalman at Foxcote that trains shall not be sent from Radstock and Wellow in opposite directions at the same time, and that without communication with the crossing agent at Glastonbury. That may be done in the case of all trains. The cabin at Foxcote is used so as to allow a second train to follow from Radstock to Foxcote when a preceding train has gone on from Foxcote to Wellow, so that although Foxcote is not a crossing-place, two trains may be following between Radstock and Wellow at the same time, protected by the block station at Foxcote. (Certificate sent to Board of Trade provides that only one engine in steam, or two or more engines coupled together, shall be on the portion of line between Radstock and Wellow at one and the same time. *See* Appendix A.) The instructions, I consider, cover the working of these intermediate cabins, as I consider such posts to be "stations." The signalman receives instructions to allow an irregular train to proceed by rule 13, with a red flag by day and a red light by night. When, according to that rule, he sees an engine with the red flag, he knows it is his duty to let the train proceed out of its ordinary course. There are two pointsmen stationed at Foxcote, taking duty alternately, the hours being fixed by the inspector (Wood). The last paragraph on page 27 is faithfully carried out. (Foxcote line clear cabin book put in.) The Foxcote line clear book is not inspected according to that rule, as it is not a station signal-cabin. The trains that came into collision were the 9.15 p.m. special train from Bath to Radstock, due to reach Radstock at 9.45, and a divided portion of an ordinary train from Bournemouth at 6.10, to Radstock 9.25, and due to leave again at 9.27. The first portion of that train was in the working time-table. Either at Wimborne or Bournemouth the train was divided, and the portion that came into collision was in no time-table, but had been advised by telegraph. The first train was timed to leave Bath at 9.15, but was very late. The other train had no time, and the preceding train should carry the train-signal, if my instructions were carried out. The crossing agent at Glastonbury would have been informed that the Bath train was running late, in order to deal with its crossing-places. It would be his duty to advise only the agents at crossing-places of its running late. Other stations need not have been informed by him. As regards the relief train in the opposite direction, it was the Glastonbury crossing agent's duty to advise all stations of the running of that train, but not the Foxcote cabin, which has not been considered a "station" in that respect. The station agents at crossing-places have the whole responsibility under the crossing agent for crossing trains. Had trains been despatched simultaneously from Radstock and Wellow in opposite directions they would be pulled up by the interlocking of the signals at Foxcote. Foxcote introduced a new block-section, and the signalman there is under the instructions, except, of course, as to crossing, which he does not perform. The Foxcote signalman may be considered as a station agent. Windsor Hill, a similar post, was opened some time this year. Trains would pass through Foxcote without stopping, provided the signals were down. In the case of a train passing Foxcote without stopping, the signalman there would, immediately on receiving notice of the train leaving Radstock, ask permission for it to proceed to Wellow. If he did not get "line clear" from Wellow the signals would be against the Radstock train. It would be nothing unusual for a train to approach Foxcote at 11.10 p.m., the time of the collision. The ordinary trains passing Foxcote run up to 12.25. The agent at Radstock would have had information by telegraph of the running of the relief train and its time of leaving Wimborne, and could calculate its time for Radstock. The Weymouth special train was also due about the same time. When I mention the crossing agent I include his assistant, who relieves

him. The Foxcote cabin was inspected by Colonel Rich some time in May 1875, and since then there have been no alterations at Foxcote. I put in all the letters I have received from Mr. Percy since the 1st January 1876 respecting difficulties he has experienced in performing his duties. There are 14 or 15. The first was a complaint of Pylle, in regard to which Mr. Percy and the stationmaster did not agree, and the result was that the crossing was not changed, and some delay occurred. Second.—Complaint of Bath. The fault was there admitted. Third.—Wellow, February. Complains of several bad cases at that station. The stationmaster puts the blame on his own clerk, who neglected to attend to the instrument. The clerk said it was Glastonbury's fault in not calling properly, and he added that the instrument was weak, a statement denied by the telegraph department. Fourth complaint.—Binegar, Shepton Mallet seems to have been in fault. The station-master acknowledges that there was remissness on the part of signalman Rodd. The guard of a train should have informed the telegraph clerk at Shepton that a bank-engine had come with his train. Fifth, 23d March 1876.—Inattention at Wellow, the papers are lost. Sixth, 27th March 1876.—Complaint of Shepton's inattention. The station-master says he had "taken up" with the telegraph clerk for his neglect. This clerk stated that he had overslept himself, but pleaded that a train had been overladen at Evercreech. Seventh.—Radstock. Complaint of inattention. The station-master replies that the telegraph might have been neglected but no train was delayed. Eighth.—Complaint of Chilcompton. There was no train in question in this case. Ninth.—Complaint of Midsomer Norton. Papers lost. Tenth.—Complaint of Wimborne respecting train advices. The station-master expresses regret and trusts there will be improvement. Eleventh.—Complaint of Shepton. Twelfth.—Complaint of Midsomer Norton. It was stated that there was no delay of trains and regret was expressed. The clerk was attending to other duties. Thirteenth.—Complaint of Shepton. Fault admitted. Fourteenth.—Complaint of Radstock. Resulted in serious irregularities. The station-master says Mr. Percy exaggerated. Mr. Percy could not retract, and added another complaint. An inspector sent to inquire, reported that Radstock was in fault in the case. Fifteenth.—Complaint of Bath's inattention. It was replied that the clerk could not get into the office. These were all the complaints within the given time. There is no crossing-order required when trains are in order, but one is always used when they are otherwise. Of the trains that came into collision, the down train should not have been allowed to leave Wellow without a crossing-order, because the station-master had received telegraphic advices of the running of the train which came into collision with the train from Bath, and also because the train from Weymouth, of which he had a special printed time-table, was due at Wellow before the special from Bath had left that station. As regards the up-train that came into collision, there is no absolute rule for Wellow to need a crossing-order before sending on the train to Radstock that met the up relief train, but there is an absolute rule that the down Bath train should not have left Wellow without a crossing-order until the arrival there of the up Weymouth train, because that train was over-due at his station before the down Bath special was started from his station. Rule 30 of the Electric Telegraph Department applies to this. The up-special would have required a crossing-order before leaving Radstock for Wellow. It was the station-master's duty not to allow the engine-driver to leave Radstock without a crossing-order; and it was the duty of the engine-driver, before leaving Radstock to have asked for a crossing-order or for instructions as to where he should cross the down-special. He was not justified in leaving Radstock without either a crossing-order or obtaining information as to the position of the down-special. It was the duty of the station-master at Radstock not to have sent forward the up-special on the night of the accident without communication with Glastonbury. It would be his duty, under his rules, that he should ask where the up-special should cross the down-train, which was over due. Mr. Percy's complaints referred principally to the want of train advices. As soon as the up-train of the collision had asked line-clear from Midsomer Norton to Radstock, the latter should have communicated with Glastonbury that he had got the notice of that train, and that he had received no notice from Wellow of the train from Bath. It is undoubtedly necessary that the crossings of trains, of which there are no printed time-tables, should be carefully provided for, and, if anything, more so than the crossings of trains which are in the time-table; and rule 30 applies to Radstock in this particular instance and to Wellow as regards the Weymouth train. Rule 14 rendered it incumbent on the engine-driver of the up-train to inquire for a crossing-order at Radstock. I travelled by the 8.11 a.m. from Glastonbury to Poole on the 7th August, and found the train very heavy, so I determined to run it back in two portions. First I had to ascertain where I could get an engine and carriages, and when I had done that I sent the message, which Mr. Percy has already produced, to him at Glastonbury. On my return to Glastonbury, about 5.20 p.m., I went to Mr. Percy's office and saw him, and found that he had received and understood my message. I had nothing more to do with the train, and left the matter in his hands in the usual way. When a train is run in that extraordinary way, I leave, as always, the crossings to Mr. Percy. I have nothing to do with crossing arrangements. I am as much shocked as anybody to find what duties the boy Hillard has been allowed by the station-master to perform. I consider that the station-master Sleep had no authority to leave his station when he did, at 6.30 p.m. on the 7th August. I think Mr. Wood's arrangement was safe for the ordinary working of the line, which permitted Sleep to leave duty at 6.30 p.m., but it was not expected that he would absent himself when there were special trains. Had no accident occurred, I should certainly have censured Sleep for doing so, if it had come to my knowledge. If an inspector observed such conduct he would report it. I do not consider it necessary to instruct a station-master, as in the case of Sleep, to remain on duty; his sense of duty to the Company ought to govern him. If Sleep went from Wellow to Midford without my leave, he was doing what he had no right to do. A station-master is never off duty, and he may not leave his town or village without my permission. According to Mr. Wood's arrangement, Hillard and Gillard were in joint charge at Wellow, and I think that would be safe. I was not aware till this inquiry of the way in which the work was done. The station-masters on our railway have immediate supervision of the working of the signals. Hillard and Gillard would have to agree when in joint charge as to the working of the signals, but perhaps not so far as to the telegraph work. An extra wire on the Bath circuit would undoubtedly be advantageous, and before this accident occurred an extra wire had been ordered. I do not think train-advices or crossing-orders have been delayed in consequence of the pressure on the present wire. I never heard before this inquiry of the O.A. signal, and I have now been informed that it is used as a terminal for messages, to show that they are completed. I consider that its use to check such a message as was sent from Radstock was improper. I consider that Mr. Percy can only arrange crossing-places on information from the station-masters, but if I had been in his position on the 7th August my anxiety for the up relief-train would have led me, if I was not otherwise engaged in more important matters, to make inquiry of it to Radstock. I take the words, "I will arrange the crossings," in Mr. Percy's message to be superfluous; only he could arrange its crossings, and I have not a shadow of doubt that after receiving that order it should still be the duty of Radstock to inform Glastonbury of the train in question. It was the duty of the Radstock station-master to have a crossing-order before sending on the Wimborne train.

If the crossing-place with the Bath train had been changed to Wellow, the station-master at Radstock would have been informed. Not twice a year I think would we run a special passenger-train such as the Wimborne train. When a station-master has a train overdue in one direction, there is no discretion left him as to whether he should advise the crossing-agent, or allow a train to go in the opposite direction. I have thought the matter over and over since, and cannot find any justification or excuse for the Radstock station-master for having sent on the relief-train without a crossing-order. I think there was excuse, if not justification, for the Wellow station-master in despatching the down Bath train, because it was due at Radstock before the up Weymouth special was due there. That train followed the relief-train. As a matter of discretion, I have no doubt he should communicate with the crossing-agent at Glastonbury for instructions. It was a fair inference on the part of Mr. Percy that the up relief-train would not get to Radstock till 11.10 or 11.12 p.m., but it had a powerful tank-engine, which enabled it to surmount the banks more quickly than Mr. Percy might have expected, though a matter like the asking for a train should not be left for the last moment. Mr. Percy would be to blame for stopping a message, but Radstock should persist a hundred times, if necessary, with such a message. I should blame the engine-drivers but very little in this instance, for not asking about crossing-orders. If I were their judge, I should consider their offence small as compared with that of the station-masters. I have considered gravely and deeply the subject of the train-staff, and I think our present single line arrangements are good. I have not thought of the staff in connection with this accident. As far as my information goes, our system is as safe as the staff. The collision would not have occurred if staff regulations were faithfully carried out, nor if our own regulations had been obeyed. I think the train-staff is an additional precaution.

Before the coroner on the 12th September Mr. Difford gave further evidence, as follows:—

When I saw Mr. Percy in his office about 5 o'clock p.m. on the day of the accident, nothing passed between me and Mr. Percy as to arranging a time-table for the up-relief-train. There is a rule in the rule book which contemplates the running of such a train. It is as follows:—

"Special Train Signals.

"Whenever it is possible to do so, due written notice of special trains will be given to all stations and to the engineering department; and special trains of which such notice has been given will carry the usual train signals.

"But when a special train is started of which no such previous notice has been given, it must carry, attached to the last vehicle, by day the red and green disc, and by night the red and green lamp provided for that purpose; and where it is possible, the train immediately preceding such special train must be provided with the double red disc by day and the double red lamps by night, to indicate to all persons on the line and at the stations that a special train is about to follow. The first portion of a divided train will be considered as a special train of which no notice has been given, and will therefore carry the red and green signals.

"Signal-lamps must be lighted as soon as it commences to be dusk; and during the interval between light and dark both day and night signals are to be used. The lamps must not be put out until broad daylight.

"All fixed signals within sight of each other and auxiliary signals must be made to repeat the same signal. In case of danger being shown by any auxiliary signal, the engine (either with or without a train) must stop at such signal; but if the engineman then sees the line clear ahead, he must proceed (with such engine or train) slowly on towards the next signal.

"No signal may be altered without the sanction of the person in charge of it, except in cases of great emergency.

"The most implicit obedience is to be given to all signals, and any neglect of them must be immediately reported."

There is also rule 26: "All special engines, or "special trains, with passengers, goods, mineral or "ballast engines, or trains not inserted in the regular "working time-book for the current month, must be "furnished, before leaving any block station, with a "telegraph pass, carefully filled up with the number "and time of the train, signed by the station agent "issuing the same, showing that the line is clear to "the next block station in advance." I am not aware that there is a special printed form for a telegraph pass. The engine-driver of the up-relief-train should have had, under the rule referred to, a telegraph pass at every station. It would be Mr. Percy's duty, and not mine, to provide a time-table for a train like the up-relief-train. I may have on previous occasions, when suddenly ordering a special train to meet the necessities of traffic, named the times at which it should pass different stations. I did not do so for the up-relief-train because it was impossible. It had to run on the South-Western Railway from Bournemouth to Wimborne, and therefore I could not know at what time it would leave Wimborne. I might possibly have got the information, if I had applied for it to the South-Western Superintendent. If the train in question had been arranged two or three days before, I should have appointed the time of its departure from Wimborne, and the time at which it should call at the various stations. I do not think it was necessary to make a time-table for the up-relief-train. Mr. Percy has made time-tables for similar trains.

Mr. Caleb Edwin Percy (sworn).—I am telegraph train crossing agent on the Somerset and Dorset Railway, and have been so for two years, and I was previously for about six years acting as assistant to Mr. Wood who was then the crossing agent. I have an assistant, William Seymour, who has been with me since my appointment, and who has been about four years assisting me at my duties. My duties are to provide for the crossing of trains when they are working out of their ordinary course as prescribed in the working time-book. I have to do so daily. Myself and assistant arrange to take alternate times of the day for duty, and both are in the office at the middle of the day. On Mondays Seymour would be in the office from 6.30 a.m. till 6.30 p.m. I should relieve him an hour to breakfast, 9 till 10, and for dinner from about 2 till 3 p.m. I should be working with him from three to five, and should be away from about 5 to 6.20. Seymour would then leave duty for the day. I should remain until the last crossing had been arranged for, which might be at any time from 10 till midnight. I should also be with him from 10 a.m. to 1 p.m. Next day we would change the hours, varying very little. If I stay late at night I do not come so early in the morning, and Seymour does the same. All the business of crossing is done in my name, Seymour having full authority to use my name and do the duty in my absence. My office is at Glastonbury, at the station on the platform. I am in communication by telegraph speaking-instruments with all crossing-places. I am in communication with 28 stations, and there are six stations or signal cabins that I am not in communication with, viz., Windsor Hill, Henstridge, Spetisbury, Basonbridge, Ashcott, and Polsham. These six places are not crossing-places for trains. I am in communication with Foxcote. On the day of the accident I came on duty at 9 a.m. There was much extra traffic, 17 extra trains, viz., eight excursion trains out and back and one relief train, as specified in the working time-table. I had the time-tables before me. The crossing-placesare there laid down, and my duty was only to arrange for the crossing-places when they had to be altered. I had a good deal of work that day, and was engaged from 9 a.m. on Monday till 8.30 a.m. on the following morning; the latter part of the duty was on account of the accident. I

should have left duty at 11.30 p.m. on Monday had it not been for the accident. I acted according to rule 30 of the Electric Telegraph Department as to train advices. I do not record the changes of crossing-places in a book, but have my crossing-orders to show. The first notice I received regarding the relief-train was a message received at 4.19 p.m. from "Superintendent of line, Templecombe, to Mr. Percy, "Glastonbury. I have sent one of the engines "of 12.50 up-goods back to Wimborne, running to "times of 1.50 down. It will work from Wimborne "to Bath as 6.10 up ordinary, which train will follow "special with excursion passengers." I took it to mean that the special engine sent from Templecombe would bring the 6.10 train, and that the 6.10 would follow a special train from Wimborne. I first of all advised all stations from Templecombe to Wimborne, (sending to first place at 4.23,) that a special engine had left Templecombe for Wimborne at 4.10 p.m., crossing No. 14 up-train at Blandford. I then telegraphed to the station-master at Wimborne at 5.48 p.m., to advise me as early as possible what time the special which would follow No. 18 up-train would be ready to leave Wimborne, and received a reply by telegraph,—not a coded message, and of which a copy was not taken,—that she would be ready to leave at 7.10. I then sent a message at 7.18 p.m., "From "Percy, Glastonbury, to all stations. A special "train will leave Wimborne at 7.10 for Bath. I "will arrange its crossings." Foxcote was not included in those messages sent to all stations; it is not generally included. There was another message at 7.13 from me to Wimborne, Bailey Gate, and Blandford to say, "A special train would leave "Wimborne at 7.10, crossing No. 12 down ordinary "train at Bailey Gate." Also a message sent to station-master, Templecombe, at 9.7, "Keep up special "train at Templecombe to cross No. 17 down "ordinary train. Repeat." This message was repeated. I then sent a message to Wincanton at 9.13 p.m., "No. 14 down ordinary train will cross "up special at Templecombe. Repeat." It was repeated. Those were all the messages relative to that train. I produce my book of advices as to running of trains, showing that I received a message from Wimborne that the special had left there at 7.24. No arrangement was made for the crossing of the special train from Wimborne with the down special train from Bath, with which it came into collision. The reason was that the train from Bath was due to reach Radstock, and would leave Radstock on its return to Bath, before the up-special train might reach Evercreech junction. I got no advice of the late running of the train from Bath until I asked for it in the first place at about 9.50. I asked whether it had left or what time it would leave, and received a reply that the train was not ready. Neither the question nor answer was recorded. I was then engaged with other crossing-orders till 10.39 p.m. I then called Bath, and asked him for the advice of the special train, asking if the special had left. They gave in reply the signal wait a minute, by means of the letters M I N. After a minute or so, being anxious about the train, I called Bath again, and the departure of the train was then telegraphed from Bath, and my clerk called out 10.23. I instructed him to call on the speaking instrument to Bath ticket platform to ask about the train, and found that she passed there at 10.48. I was then engaged with my crossing-orders for other stations on the line up till 10.59, when we commenced to call Wellow. We could not get Wellow's attention until 11.12 or 11.13. Being anxious, I asked, "Where is down special?" They replied "Over T," from which I understood that she had been taken on the block at Foxcote and passed there safely. They added, to "Over T" that "Up was on from T" about 11.12 or 11.13. I understood from that that the down-train would have gone safely into Radstock, and that the up-train would have left Foxcote for Bath. I next called Radstock, and asked for the down-special. It was replied, "I don't know," and to the best of my recollection they added that the up-special had left Radstock. This would be about 11.15. The messages referred to were sent either by myself or my clerk, by the speaking instrument in my office. We proceeded to call Wellow, but could not get its attention. I found a defect in the telegraph (no doubt caused by the collision), which prevented my working beyond Radstock and Foxcote. I kept trying to ascertain particulars of the down-special from Radstock. I was told from Radstock that the down-special from Bath had not reached that station, and at 11.37 I learnt from Radstock that there had been an accident. In a few minutes I sent for the superintendent's chief clerk; he came to my office, and I informed him of the accident. We went together to Mr. Wood. I was in my office with my telegraph-clerk from about 7 p.m. till the time of the accident; my assistant, Seymour, had left me about 6.30 p.m. Any train working out of the ordinary course and not in the time-books I should advise its time of starting, &c., as in the case of the engine and special-train already referred to. No crossing-place ought to be appointed or employed for trains not working as prescribed in the time-tables, except under arrangements by myself or my assistant. I should say that trains do not often cross out of their ordinary course without my direction. It does not happen every day. As a rule I receive advices of trains in order to manage the crossing-places, but occasionally the station-masters neglect that duty, and I am unable to make proper arrangements for crossings. I then make inquiries, as I did about the Bath train. It might be daily that I have to ask as to the course of trains when the station-masters do not send information as they ought to do. I have difficulty frequently to obtain the attention of a station-master when making such inquiries. Otherwise there is no difficulty in getting information. I find a difficulty sometimes in obtaining attention early enough to arrange the trains, and it is chiefly through having to secure attention. There would be no difficulty if station-masters obeyed their instructions, and sent me the advices properly. The result of the want of information would be delay to trains. I can hardly say that trains never change out of course without my arrangement; it is a very rare thing, but it has happened. John Locke was the telegraph-clerk who was with me in the office. I should never inform the Foxcote man of crossing arrangements, but I should advise Radstock and Wellow of any change affecting their stations. Foxcote would not telegraph to me, nor would Radstock and Wellow signal trains to me. I should have no advice between Bath and Shepton Mallet. Taking a train leaving Bath: I should be informed of its departure, and if an up-train were late, I should be informed by Wellow of the running of the trains, or I should ask Wellow, but I should not know directly from the station-masters. I have made written complaints about my inability to get proper information about trains from station-masters, as above stated. They have been numerous. I have no other duties than that of crossing agent. The system of changing a crossing-place is as follows: a train coming from Bath, timed to cross an up-train at Wellow, and the up-train being late, it would be my duty to send an order "Keep No. — up-train at Radstock to cross No. — down-train at Radstock." That keep-train order would be repeated to me from Radstock, to show that it was correctly understood, and I should then telegraph to Wellow "Send on No. — down-train to cross No. — up-train at Radstock." This message is repeated to me. I always get the keep-train message acknowledged before sending the send-on order. The complaints referred to have not increased of late. I might get as many as three on one day, and not any more for a fortnight. I frequently see the answers addressed to the superintendent by the station-masters to my complaints, but I make no written note of them. They are returned to the superintendent. I noted the time, 11.37 by the clock, when I had information from Radstock of an accident having occurred. The books kept in my office are a train advice book and a note book. The latter book is used to record

delays to trains. I have a letter copying book in which I preserve some letters. I wrote all the messages which my clerk transmitted. When blanks are left in the train advice book of the times of very late trains arriving, when there is no one in my office, they are filled up from subsequent information. If we do not get the advice of a train at the proper time, we ask for it, and then put it in the book, so there are no blanks. The train leaving Wimborne was regularly reported, and the Bath train was reported from Bath. Knowing that one train left Evercreech at 10 o'clock, and the other left Bath at 10.43, it occurred to me that the down train would get to Radstock and return to Bath in front of the up-special. I should calculate that the train leaving Evercreech at 10 would reach Radstock about 11.15. I learnt yesterday that it reached Radstock at 11.2 that night. The Bath train, I should calculate, would get to Radstock at 11.15. I was waiting for the up-special to reach Radstock, and to get advice of it, to arrange the crossing. Generally I only get advices from Radstock after asking, but sometimes they send them spontaneously, and I do not record those advices. I was occupied with crossing-orders or I might have asked Radstock for the advice of the train. It took me 14 minutes to get the attention of Wellow about the down-train, and that was why I did not ask about the up-special to Radstock. It was from 10.59 to 11.12 or 11.13, except for one minute, that I was engaged calling Wellow. During that minute my clerk was taking a train advice from Templecombe. This book assists me in arranging crossing-places. All trains are reported, but I have no duty to perform except as regards the trains which are out of course, and the crossing-places have to be changed. The train advice book is the one upon which I rely for changing the crossing-places of trains. It would assist me further to have a book with more stations in it. It was what I wanted on the night of the accident. The first train was due to leave Bournemouth at 6.10, and ought to have crossed the Bath train at Wellow, which I arranged; next came the train from Bournemouth that met with the accident, and, thirdly, a train leaving Wimborne at 8.11. I produce the crossing orders sent on the day of the accident from 9 o'clock p.m. (1) Binegar, sent 9.7, repeated 9.8. (2) Chilcompton, sent 9.9, repeated 9.10. (3) Pylle, sent 9.15, repeated 9.16. (4) Pennard, sent 9.19, repeated 9.20. (5) Shepton Mallet, sent 9.24, repeated 9.25. (6) Binegar, sent 9.26, repeated 9.27. (7) Evercreech junction, sent 9.27, repeated 9.28. (8) Pylle, sent 9.30, repeated 9.31. (9) Bath, sent 9.55, repeated 9.58. (10) Wellow, sent 9.59, repeated 10.0. (11) Wellow, sent 10.19, repeated 10.20. (12) Radstock, sent 10.22, repeated 10.23. (13) Wellow. Told Wellow at 10.35 to keep the Bath special at Wellow to cross an up ordinary and up special from Burnham. Repeated 10.36. (14) Radstock, sent 10.35, repeated 10.36. To send the Burnham train to cross down Bath train at Wellow. (15) Wincanton, sent 10.57, repeated 10.58. (16) Templecombe, sent 10.59, repeated 11.0. (17) Cole, sent 11.15, repeated 11.16. (18) Wincanton, sent 11.17, repeated 11.18. There were these 18 crossing orders between 9 and 11 p.m. on the night of the accident. The case where the accident occurred was the first attempt on that day to cross trains without my order. Each crossing requires two forms—a keep order is sent first and repeated before the send-on order is given. The two crossings for No. 16 train were accomplished. I produce the note book referred to in my former evidence. It is kept as my record of any delays which I may have to account for. I had none such for the day in question. The complaints produced by Mr. Difford are all to my knowledge that I made within the time. In regard to the evidence of John the telegraph clerk at Radstock as to the crossing of No. 18 down goods train by the 7.10 from Wimborne, I explain that No. 18 down goods train was timed by the printed tables to cross the Weymouth train running 32 minutes behind the 7.10 Wimborne train at Shepton Mallet, and as the 7.10 Wimborne train was running ahead of the Weymouth train, which was timed to cross No. 18 at Shepton Mallet, therefore the Shepton Mallet station-master could not start No. 18 down goods train until after the up Weymouth train had reached Shepton Mallet. Trusting to that I deliberately did not make a crossing place for those trains. It is very rarely that we have such circumstances, but I have under similar circumstances done the same thing before. I sent telegram produced at 7.40 on the day of the accident, saying I would provide for the crossing of the 7.10 Wimborne train, and consider that I did so. I advised Shepton Mallet in the message quoted above how the 7.10 Wimborne train was running. I have no record of the places which telegraphed the Wimborne train to me, but I remember three, viz., Wimborne, Templecombe, and Evercreech. The Wimborne train left Evercreech junction at 10 p.m., whereas No. 18 down goods train was due to arrive there at 9.46. In regard to John's statement, that he attempted to telegraph in regard to the Wimborne train, I give it a contradiction. John did afterwards give me O.A. when I tried to ask him something. There was no attempt from any station after Evercreech junction to send any message as to the Wimborne train till the collision occurred, and I did not ask any station about it. It is not possible that the clerk Locke in my office could have received any question or given the O.A. without my knowing it. After completing the crossing orders for Templecombe and Wincanton, we immediately called Wellow, commencing at 10.59, and kept on till 11.4 or 11.5, when my clerk took the departure of a train from Templecombe. It was at that moment, about 11.5, that he made inquiry of Radstock about the up relief train and received O.A. I did not know this when I gave my evidence here the other day, and all I know now is from what my clerk told me. My clerk told me that he took the train from Templecombe, asked Radstock about the up relief train, received O.A., and immediately resumed calling Wellow. We continued calling Wellow till 11.12 or 11.13 about the Bath special. The first information I received from Radstock was about 15 minutes after the up relief train had left Radstock. It was after I received the message "Down over T. and up on from T." from Wellow that I received that information from Radstock. It was about 11.12 or 11.13 when I received the messages from Wellow "Down over T. and up on from T." They came together as one message, there being no perceptible interval between them. There was nothing before or after from Wellow. The message did not excite any apprehension in my mind at that time. After this, about 11.15, I called Radstock, and got the reply that the down-train was not in and the up-train had left. I am not clear as to whether it was then Radstock gave O.A. in reply to my questions, or whether Radstock did so at all, but I have no doubt it was done. I can remember no other case except the one referred to in which I did not arrange the crossing places of trains on the day of the accident. I consider it was the duty of Radstock under the regulations to have informed me when they received notice of the up relief train from Midsomer Norton; and it was also the duty of Wellow to advise me of the Bath special when it left Midford. I did not ask Radstock about the up relief train, because I did not expect it to be there. I deny that the message from Radstock was rejected, because my clerk was engaged at another instrument between 10.51 and 10.59. At 10.59 I looked at the clock. I left the office for two or three minutes, but I think my clerk would have told me of any message he had received. I did not remember until I heard John's evidence that at 10.30 he asked how the excursion trains were coming, but I know he did so. Before 10.51 I was in the office about three yards from the instruments. I looked at the clock when I left the office, and it was 11 p.m. precisely. It would not have been more than five minutes that I was out, but I did not look at the clock when I returned. On my return I found my clerk calling Wellow. It is not the practice of station-masters to allow trains to go on unless they get a Keep order from me. They advise me freely of the positions of the trains. I did

not leave the office from 6.30 to 11 p.m. I feel certain that if I had been the Radstock station-master I should not have allowed the up relief train to leave Radstock station without communication with the crossing agent. If I had been checked in the inquiry I should have persisted until I got a reply. I do not think if I had been the station-master at Wellow I should have let the Bath special leave without communicating with the crossing agent. I consider it was his duty to have communicated with me. There was no stop at all in the message "Down over T. up on from T." I remember now a little correction I have to make. At 10.39, after we had sent Radstock a send-on order to send on No. 16 up special to cross No. 7 down at Wellow, it was then Radstock made an attempt to say something. I don't know at all what they were going to say, and I told my clerk, "Stop that, and get the T. A. from Bath," that is the train advice for the down special from Bath. I did not tell you that the other day, because I did not remember it. He did not do it at 10.54, but at 10.39. I knew it could not be the Wimborne special; she could not run the distance from Evercreech to Radstock in 39 minutes. I could not arrange the crossing places in the absence of any information from either the station-master at Radstock or the station-master at Wellow. Hillard's evidence quoted as to what happened at Wellow between 11.15 and 11.18 as to the exchange of signals on the block instruments between him and Foxcote between the two parts of the message "Down over T. and up on from T." is not correct. At 10.39 on the 7th August my clerk Locke was in the office when Radstock was going to say something, and I stopped him. The needle was held over by Radstock, with a view apparently for him to send a message, when I told Locke to stop him and call Bath. There was no one in the office except myself and Locke. I flatly contradict that Radstock was stopped again at 10.55, or that he made any attempt to communicate again after 10.39. If Locke had stopped him I should have been aware of it. The plan produced is a correct plan of my office. Of the five instruments shown as on the shelf on the plan, No. 1 is the post office instrument, No. 2 applies to stations between Wells and Burnham, No. 3 applies to stations between Glastonbury and Wimborne, No. 4 to the principal stations between Highbridge and Wimborne, both inclusive, and No. 5 to the stations between Glastonbury and Bath, and is the instrument referred to in the present case. From 10.51 to 11 o'clock, my clerk and I were engaged with No. 4 instrument in making inquiries as to when the up goods train would leave Templecombe, and sending crossing orders, sent respectively at 10.59 and 10.57 to Wincanton and Templecombe. Whilst Locke was working at No. 4 instrument I was standing close to him, as far as I remember, on the side of No. 5 instrument. I had been writing crossing orders at the table between 10.51 and 10.55. I do not remember doing anything between 10.55 and when the crossing orders were sent. I know I was standing by Locke and near the instruments. At 10.51 Locke had ascertained from Bath ticket platform that the down special had passed there at 10.48. I saw the message sent and replied to. Then I took No. 4 instrument and asked about the goods train. They said, "Ready in a minute," at 10.53. I then told Locke to call Wincanton, and I sat down to write the crossing orders, knowing Locke was engaged with No. 4 instrument. I was sitting sideways to the Bath instrument when writing, and could not see that instrument. It was impossible that Locke could have received anything from Radstock at that time, and replied O.A. without my knowing what occurred. I am not quite sure whether Inspector Wood came into the office or not, but I am sure he looked through the trap. It was shut, and it was about 10.40 when Inspector Wood opened the trap and looked through it. He asked me whether I had any advice of the train from Bath. I replied that I had not. He further said, "If she has not left, stop her, cancel her "running, because there is plenty of room in the "up-trains to take the passengers from Midford to "Bath." He said nothing else in regard to the up relief train. He did not ask any question in regard to her running. I did not ask Radstock after 10.39 what they had wanted to say when we stopped them. I do not think it was necessary under the circumstances. I do not know of the instrument being shaken angrily at Glastonbury when stations persisted in communications. I have told my clerk when sending a crossing order to stop and attend to a station which had called more than once. I do not believe that a station has ever been treated in the way described by Mr. John, when persisting with a message. I had calculated that the up relief train would reach Radstock at 11.15. I made such a calculation after 10 o'clock. I do not know whether I did so before 10.39. It would, I think, be before 11 o'clock. It is 17 miles from Evercreech to Radstock, and a train stopping at every station would take about an hour and a quarter to run the distance. I knew at 10.39 that nothing could then be known of the up-train at Radstock. It could not get near Radstock in 39 minutes from Evercreech. At 11 o'clock I left the office and returned at 11.5 or 11.6, and my clerk was calling Wellow. I took the instrument and went on calling Wellow to 11.12 or 11.13, and what I have before stated as to what followed is correct. There is no written message from 10.39 till 10.55, or any entry, except the train 10.43 in my advice book. If Inspector Wood said he came into the office I would submit to it, because I was very busy at the time. I fancy he said something about my being busy, and he would not then speak to me. My clerk told me yesterday the door of the office was locked, but my recollection of it is not clear now. I may have unlocked the door to let in Inspector Wood, but I do not remember. The door was locked because when we are busy passengers come and inquire about trains and distract our attention. There would be passengers at Glastonbury station on the evening in question. It would be before 10.39 that Inspector Wood communicated with me. I was not interfered with by the passengers or anybody else on that night in doing my work. Mr. Difford was not in my office from 6.30 to 11 o'clock, and I had no communication from Mr. Difford during that time. I saw Mr. Difford at 5.20. I showed him the message I had received from him respecting the up relief train. The substance of the conversation was that the number of passengers required an extra train. I might have told him what arrangements I proposed to make. The communication with Mr. Difford was to the effect that the special train would follow the ordinary 6.10 train from Bournemouth, which train would carry special lights. I also told him that I thought I had better inform all stations of the running of the special in addition to the lights. Nothing passed between us as to its crossings, or as to any precaution to be adopted in regard to it. Inspector Wood does not instruct me in regard to crossing places. I am solely responsible. When Inspector Wood spoke about cancelling the Bath train, I remarked that I thought it would be too late to stop it. We began calling with that object at once, perhaps when Mr. Wood was in the office, but he left immediately. There was no discussion between us as to the arrangements that would be required in consequence of the Bath train being late. In reference to my previous statement, "Generally I only get advices from Radstock after asking," that would not render it the more necessary for me to ask them the position of the up-train on that night, even after they had tried to communicate with me, and I had promised to provide crossing places. When I said "We" in regard to calling Wellow, I meant my office; and it might mean either myself or my clerk. My clerk told me that while I was out of the office from 11.0 to 11.6, he was engaged in calling Wellow, and taking a train advice from Templecombe. I was not in the office when my clerk asked something of Radstock and got O.A. in reply.

Before the Coroner on the 12th September, Mr. Percy gave further evidence as follows :—

Several times before trains have run like the up-relief-train in question, but not the entire length from Wimborne to Bath. For such trains I should be advised by Mr. Difford as to the time of their leaving the starting point. As I am not responsible for making time tables generally I do not consider that I was responsible for making a time table in the case of the up-relief-train. I had never done so before. I did not expect a time table for the up-relief-train from the superintendent.

John Locke (sworn).—I am a telegraph clerk in the service of the Somerset and Dorset Company, and have been so about five years. I have been working with the crossing agent at Glastonbury about two years, having to send such messages as I am directed. I make entries in the Train Advice Book produced by Mr. Percy. There is a clerk who relieves me. There are few persons who make entries in that book. The entries are made at once, as soon as they are received. If we do not receive the times we ask for them, and then put them in. Bath is very bad—the worst. Wimborne is rather bad. When the time is not sent we keep asking for it until it is sent. That has to be done daily. On the day in question I came on duty at 9 o'clock in the morning, and was on duty till 8.30 next morning. I had an hour for dinner and an hour for tea, returning after tea at about 20 minutes to 5, from which time I did not leave the office until 8.30 next morning. We were busy all the evening. All entries respecting the special train that came into collision from Bath, as well as the Bath train itself, were made by Mr. Percy. I took the message at 7.24 from Wimborne, but none of the subsequent messages entered in the book. I was engaged with other instruments. I have nothing to do with the crossing of trains, only acting as I am told. I took the notice of the down train from Bath at 10.43. I thought Bath signalled the train as leaving Bath at 10.23, so I made a second inquiry, thinking, as it was 10.46 when the message was received, there must have been a mistake. I signalled B.A. to the ticket platform at Bath, and got the time of passing there, which was 10.48, at 10.50. We keep a Note Book, where we register delays in consequence of station-masters not advising us of the trains. I was calling Wellow from 10.59 to 11.5, but could get no attention. At 11.5 I began to call Radstock, and they first replied "Good," and left the instrument. I got attention on that occasion in half a minute, and asked "Where's down special?" I called a second time, and asked if they refused to answer my question respecting the down special. They replied "Don't know;" meaning they did not know where the special was. At 11.7½ I called Wellow again until about 11.9, when Mr. Percy began to call Wellow. I could get no attention. Mr. Percy said, I don't remember at what time, "Down is over T, and up left T;" T being Foxcote. I then thought it was all right. Mr. Percy then called Radstock again, and asked where the down-train was, and they told him they did not know, and said the up had left Radstock. We were then alarmed. I hardly know what happened after that. I do not know at what time information of the accident was received. On that night the instruments were in perfectly good order before the accident, but afterwards they could not communicate further than Foxcote. I have seen some of the written complaints of station-masters not reporting trains, and not answering calls. The complaints of the want of attention on being called have been 4 or 5 times a week. There was no one else in the office but Mr. Percy and myself during the whole evening. I produce two books—a note-book used by Mr. Percy, myself, Seymour, and a clerk named Ashford, but on the evening in question only Mr. Percy and myself were in the office. On August 7th nothing material to the accident was entered therein. The other is a train report book. In that book nothing is entered of train reports from Radstock and Wellow, because there are no columns for them. (Mr. Difford explains he established the book to inform himself how the trains were running at certain junctions. He does not consider it necessary to have a book for train advices from all stations, and Mr. Percy, when offered such a book some time ago, stated that it was not required. There would be more trouble than it would be worth.) In the train reports book on the 7th August Mr. Percy made entries that the up relief train left Wimborne at 7.24, Templecombe at 9.17, and Evercreech at 10 o'clock. That the Weymouth train left Wimborne 8.11, arrived at Templecombe 9.34, left 9.47, left Evercreech 10.23, and that Burnham special left Evercreech 9.45, arrived at Bath 11.40. The Bath train was entered 10.23 and altered 10.43 as the time of its leaving Bath. I came back from my tea about 4.45 on the day of the accident. I do not know whether I afterwards left the office, but from about 8.30 to 11.6 I was constantly in the office; I do not remember leaving during that time. I forget whether I asked Radstock any verbal questions during that time. I sent a crossing order at 10.39 to Radstock, and it was then that they attempted to ask a question, and Mr. Percy, as he stated in his evidence, told me to leave it and ask for a T.A. from Bath. I expect I gave Radstock S.R. It would be about 10.39. I am perfectly certain it was not later. I know I did not give Radstock O.A., as stated by Mr. John, at 10.55. I was in the office at 10.55. There were crossing orders coded 10.55 to Wincanton. At 10.39 I had no other communication with Radstock than the order referred to. When I stopped Radstock, they had only held over the instrument, and had not said a word. It does not very often happen that people are treated like that when they want to telegraph. I was engaged till 11 o'clock sending orders to Templecombe and Wincanton. There are five instruments in our office, and I can say that no one was calling from 10.50 to 11 o'clock. What Mr. John said must have been untrue in regard to being stopped about 10.55 in a question to Glastonbury. The next communication with Radstock was 11.6. I had been calling Wellow from 11 to 11.5. At 11.6 I asked Radstock "Where is down special?" and they said "Good." There was no interruption to me in giving that message; but I gave the whole message, "Where is down special?" twice, and John gave me O.A. If John stated he stopped me twice when I got as far as "Where?" his evidence is incorrect. When John had given me "Good" to the two first messages, I asked, "Do you refuse to answer my question?" and his reply was "Don't know." I am quite certain he did not say the up special had passed. There is a difficulty in working the Bath instrument, owing to the business on the circuit. Sometimes it occurs on all the instruments, but more often on the Bath instrument. As far as I can remember, I was the only person in our office who sent a message between 10.50 and 10.59, when Mr. Percy called Wellow. I do not remember any difficulty with the crossing of trains on the 5th of June Bank Holiday of 1876. We have been busier than we were on the 7th August. Sometimes the trains have been delayed a few minutes at such busy times. I know I was engaged on Wimborne through instrument and other instruments from 10.50 till 11 o'clock. I did not touch the Radstock instrument during that time. I cannot say positively whether Mr. Percy did or did not do so.

Mr. Percy here stated: There are 11 stations on that circuit; it is possible that any one of them might have received the message, and given O.A. The 11 stations are Bath, Bath ticket platform, Midford, Wellow, Midsomer Norton, Chilcompton, Binegar, Masbury, Shepton Mallet, Evercreech Village, Evercreech Junction. Any one of these may have pretended to receive a message from Glastonbury, and to have sent a reply.

John Locke resumes.—I remember Mr. Wood coming into the office about 10.30 p.m. or 10.40 p.m. on the

night of the accident. It was before we finished sending the send-on order to Radstock. I know the door of the office was locked all the evening before Mr. Wood came in, but I cannot remember unlocking it for Mr. Wood, who I believe was the first to enter the office. He asked Mr. Percy if the down special had left Bath, and Mr. Percy replied it had not left. Mr. Wood then said, "Better cancel her, there will be plenty of room for the passengers in the up-trains." I do not remember anything else passing. I know that Mr. Wood left the office before we commenced to call Bath with that object, and before we finished sending the send-on order to Radstock. About four or five minutes before Mr. Wood came into the office, he spoke through the trap. He was going to ask Mr. Percy about the down-train, but seeing he was busy he said, "All right; go on," and came into the office a little later. That was all he said through the trap. Mr. Percy told me to stop the message at 10.39. I know nothing about the attempted message from Radstock at 10.55. About that time I was calling Wincanton, to send them a crossing-order. Mr. Percy was then writing the orders. I did nothing between the time when I was engaged with Bath ticket platform and when I began to call Wincanton. The crossing-orders above referred to were written about two minutes before they were sent. I did not leave the instruments between 10.51 and 11 o'clock. I was engaged with No. 3 and No. 4 all the time. It is impossible that Mr. Percy could have given the O.A. to Radstock without my seeing it, but he might have done it without my remembering. I did not give the O.A. myself, it would be impossible for Mr. Percy to give it without my seeing it, and it is possible he may have given it without my remembering it. Mr. Percy took the message from Wellow himself. I was standing at his left hand, and am able to say from hearing him read it off that it was one continuous message, and that there was no break in it. I have never shaken up the instrument angrily, as described by Mr. John, nor have I seen it done by any one else. Mr. Percy is rather particular in seeing and hearing what stations have to say. Radstock very often advises us of trains without our asking them. They send train-advices with and without our asking them about an even number of times. About 10.40 we called Bath for two minutes, and after waiting we called them again, and they gave us a T.A., which I took as 10.23. Mr. Percy said it could not be 10.23, so I telegraphed to Bath ticket platform, and found it was 10.43. It is our practice if a station tries to get our attention and is checked, not to ask them afterwards what they wanted. I never knew a case of stopping a message by O.A. until that at 10.39. I am sure they were not stopped again by O.A., but I may have stopped them again by S.R. when calling Bath between 10.40 and 10.45, but I do not remember doing it. I might have done it, because I was already working at the instrument on which the call would come. I know I could not have done it later, because I was at the Wimborne instrument. Mr. Percy went out at 11 o'clock. I did not notice the time when he came in again. I knew the up-train left Evercreech at 10 o'clock, and the down-train left Bath at 10.45, but I was not anxious about the up-train even after Radstock's attempt to get attention.

Alfred Dando (sworn).—I have been signalman in the employ of the Somerset and Dorset Company since the 13th June this year. I have been all the time at Foxcote. On the 20th of last May I went to Glastonbury to see Mr. Difford, and on the following Monday I was taken on as a porter at Radstock station. From the time I became a porter I was allowed to go when I had time to the Radstock signal cabin to learn signalman's duties. I went nearly every day into the cabin, but did not touch the instruments or levers. I tried some of the levers, but was not strong enough to move them. I do not remember having ever touched either block or speaking instruments in the cabin at Radstock. My hours, when porter, were from 7.30 a.m. to 7.30 p.m. one week, and another week from 8 a.m. to the last up passenger train due at Radstock at 9.25. p.m. I went into the Radstock cabin daily until the afternoon of Tuesday, the 13th June, and was learning till the following Monday, when I began to learn the duties at Foxcote cabin. I cannot take a message or send one on the single needle telegraph instrument. I can read and write, but I cannot write well nor read excellent. Everything went smoothly to the time of the accident. I only had occasion to use one signal-lamp at night, except when a special might come from Bath. That lamp was on the up home-signal post. We have late trains going up but not down. The up distant-signal would be lighted from Radstock if lighted at all, but I do not know that it was lighted. The down train from Bath passed me at 8.37 on the 30th June. The Line clear book produced was at Glastonbury during July, and we had another for the time. I begin duty at 6.5 a.m., and keep on till 4 p.m. I am then relieved by my mate until 6.5 next morning. The man on night duty waits until the last up goods train passes; on one night pointed out it was 12.20, another, 1.36, again, 12.28, 1.39, 12.20, 1.0, when it passed. The first I would hear of a train approaching me is "Line clear" being asked either from Wellow or Radstock, then I give three beats to the right, "Yes, line clear." They say "Train will start" by three beats to the left, and then I pin my needle over to the left, which means "Train on line." When the train has arrived I signal four beats to the right, having, when Wellow or Radstock has said "Train will start" telegraphed for "Line clear" to the other, and if it be not received, stop the train by red flag or red light. I can see the up-distant signal by day, but I have never seen it by night. It is lighted by people at Radstock. If they give me trains from Radstock and Wellow at the same time I would block the line by six beats to the left. The train from Radstock was the first I heard of when I had "Line clear" at 11.2 from Radstock I gave three beats to the right "Yes, line clear," and it came on to my signal cabin. A previous train going towards Bath was not off block at Wellow, and I stopped the other train near my cabin in consequence, by showing a red light with a hand-lamp, in addition to the signal-lamp of the home-signal. I do not know whether the distant-signal lamp was lighted. I brought the train from Radstock to a stand a little past the home-signal and close to my box. I then waited till they unblocked from Wellow, and when they signalled the arrival by four beats to the right, I replied with four beats to the right. Then I asked "Clear for the train" which was standing at my cabin, and obtained "Yes, line clear," by three beats to the right. Then I signalled "Train will start," and they gave three beats to the left to signify line blocked, and pinned their needle for me to send my train on. I showed a green light with my hand-lamp to the engine-driver, and he started as soon as he could. The next thing that happened was that this train came in contact with the other train. The first thing I heard was the shock of the collision. My signals were against the down train. I lighted the home-signal lamp myself when I thought it was getting dark and enginemen might not see the arm. I put the lamp in the box and pulled it up. It was alight at the time of the accident, and immediately afterwards. I had only once before lighted that lamp, which was for a special train. I got no messages after the accident. I am certain that at the time of the accident my needle was pinned to "Train on line." I know nothing of crossing trains. We are supposed, if we have "Line clear" from Wellow or Radstock, to let a train go on to the other place. I look for the lamps and flags of passing trains. I cannot say whether there was any such signal on the Radstock train. The previous up train to which I refer is marked wrongly (*special* 13) in the book. I gave "Line clear" for it at 10.44 to Radstock. Radstock gave "Train will start" at 10.44, and I gave "Train arrived" at 10.48., but the train ran past my cabin nearly to where the collision took place that

subsequently occurred. The train was backed, however, and at 10.48 I entered its departure. The arrival at Wellow was signalled back 11.4. I had previously entered 10.58, which was a mistake in my looking at the clock; I cannot account for it in any other way. I made the correction immediately. I stopped the train which I marked as arriving at 11.5, because I had not got "Line clear" for the Burnham train till 11.4. I put down in the book "Collision took place 11.6½, W. took on the train for Wellow 11.6," before 12 o'clock the same night. The Radstock train stopped at my cabin four minutes before I let it go on. I am certain Wellow did not ask to send on a train before the Radstock train arrived. I was 20 years of age on the 19th May last. I receive 15*s.* a week wages. I had no oil for my distant-signal lamps on the night of the accident. It had not come from Highbridge. I put the last of my oil into the home-signals' lamps. If I had had oil I should have lighted the lamp of the distant-signal towards Bath. I had not lighted that signal-lamp before. The latest train from Bath is usually 8.16 from Wellow. I had instructions to light the distant-signal lamp, but could not carry them out that night as I had not enough oil. When we want oil we tell or write to Mr. Jarrett, Radstock station-master, and we put a label for it for Highbridge on the can, and then we put it on the bank engine and that takes it to Radstock. I had a difficulty on the night of the accident in attracting the attention of Wellow on the telegraph instrument. I was about two minutes getting it. I wanted to get "Line clear" for the train from Radstock, which had come to a stand at my cabin. The last communication before then that I had had from Wellow was when he signalled the arrival of the Burnham special. It was directly after Wellow announced the arrival of the Burnham special I began to call them as above. They had not announced the arrival of the Burnham special before the train from Radstock reached my cabin. It was about four minutes after the arrival of the train from Radstock that Wellow announced the arrival of the Burnham train. As soon as I asked "line clear" I got it. The train from Radstock would therefore have been standing six minutes at my cabin. I got the arrival of the Burnham train from Wellow at 11.4. I should not like to say that I told anybody after the accident that I could not attract the attention of Wellow. I cannot say whether I did or not. I lighted the up home-signal immediately after train No. 16 goods had passed. I lighted that first, and the home-signal towards Radstock afterwards. The oil I put in the home-signal lamp on the night of the accident was a very small portion. The lamp was burning brightly when I pulled it up to its place. I did not see it again. I put into the lamp all the oil I had. I cannot say that I told Mr. Jarrett I was so confused and frightened that I did not know what I was doing on the night of the accident. I may have said so. I am aware of nothing that confused and frightened me before the accident. I cannot remember omitting to give the beats to signal arrival. It does not happen very often that my arrival beats are not acknowledged. Wellow and Radstock most often give the beats to signal the arrival of trains. I wrote "special 7" in my "Line-clear book" because I was expecting that train, the Bath train. I wrote it at 8.46, after signalling a down goods train. I had lighted my signal lamp, as I think, before the 8.46 train went through. That was the down train previous to the Bath train. I made the written statement produced after the accident, and signed it. I wrote it after Mr. John came into the cabin. I cannot tell when. I think John came alone to my cabin, and told me to make a note of it. He was present when I wrote, but he did not tell me what to put, and I did not show it to him afterwards. I am sure I wrote it myself without consulting John. I put it in my pocket until the policeman (Furze) came, to whom I gave it. I guessed the time at which the collision occurred, and the half minute is obtained by the time allowed after the up relief train had been started by me until the collision occurred. The 11.2, the time the Wimborne train was sent from Radstock, I put in when it was signalled, but the 11.5, 11.6, 11.6 I put down when told to do so by John. He did not tell me what figures to enter, only to put down my time if I had not done it. I wrote the memorandum after putting the note at the bottom of the page in the "Line-clear book," which also I had written at John's suggestion. The memorandum was written before the constable came in. I knew we had to put down in the book any irregularities that occurred during the day, but I did not know we had to make a report such as the memorandum. I first entered the figures at the top of the page, I secondly made the memorandum at the bottom of the page, and thirdly the memorandum on the separate paper dated 7th August 1876. John told me to make a note of it, and then I wrote the longer memorandum after the note in the book. I made no rough copy of the memorandum; I only wrote what is produced, and that is the original.

James Sleep (sworn).—I am a station-master in the service of the Somerset and Dorset Railway Company at Wellow, and have been so about 10 months. Before then I was a signalman at Evercreech junction for about six months. It was then that I joined the service of the Company. I am pretty well acquainted with the regulations; I work by them occasionally, sometimes in the absence of the telegraph clerk, and sometimes when he is present. The single line arrangements for the working of trains are attended to chiefly by the telegraph clerk. I receive 23*s.* a week pay, and the uniform. I was at the station when the present collision occurred. Previous to that I had been off duty since 6.30 p.m., having come on duty at 5.30 a.m. At 6.30 I left duty altogether, and the telegraph clerk and signalman were in charge of the station. The telegraph clerk only was in charge of the single line arrangements and the telegraph instruments. His name is Arthur Hillard. He has been at Wellow a few days longer than I have. I was present some time after 11 p.m. I do not know exactly when the down special from Bath arrived at Wellow. That train had to cross two other trains at Wellow. I came from Midford by that train. I made inquiry of Hillard on my arrival, and he referred me to the telegraph written messages he had received in regard to the trains. I produce the messages in question. A. received 7.56, B. received 10.4, C. received 10.24, D. received 10.40. I obeyed those messages. I did not receive any other telegraph messages. I gave the authority to the guard for the down Bath special train by which I arrived, to leave Wellow after a detention of about three minutes, to start for Foxcote. The position of the trains was this: The up ordinary goods train was standing at the station in front of the up Burnham special, which was standing on the Radstock side of the Wellow home-signal. In order to get this train inside the signals we had to move the up goods train forward off the loop in the direction of Bath; then the Burnham special came on to the loop where the goods train had been standing. Whilst the Burnham train was standing outside the home-signal, the block had been kept on to Foxcote, and as soon as it was brought on to the loop I told Hillard to signal her arrival to Foxcote, and to obtain "line clear" for the departure of the Bath special, and to start that train. I did not see the signals pass. I was standing opposite the signal box, and Hillard was, as far as I remember, just behind me. He would have to go into the booking office to work the instruments. He appeared to go in for that purpose. I did not go in with him. As he came out I met him at the door. I asked if it was all right, and he replied "Yes." That was all that passed between us at that time; and I stepped into the office myself. I saw it was all right to start the train, as Foxcote had blocked the line; the needle of the instrument was blocked over to the left, as if for that purpose. I saw that, before the train was started. I said nothing to the engine-driver. I knew of the

relief train from the telegrams, and also from seeing a double red light on the up ordinary passenger train, which indicated "special to follow." According to my rules I had nothing more to do for the Bath train. The up ordinary train referred to (No. 18), according to my book, reached Wellow at 10.3, and started again at 10.7 (?) I heard Mr. Difford's evidence. I think that, under the rules, I was right in despatching the Bath special as I did. It was according to my usual practice. The up Weymouth train was due at Wellow at 10.32, when I despatched the down Bath special. That would make no difference in the opinion I have already given, unless we had been advised by the crossing-agent at Glastonbury. The Bath special would have to cross the Weymouth train at some place not indicated in the time table. Rule 14 referred to. I consider that rule would apply only to ordinary trains running out of their usual course. I do not take it to refer to the case in question. The train from Bath upset the working arrangements for that evening by being late. According to the time table the Bath and Weymouth trains had not to cross, so they do not come under the letter of rule 14. Glastonbury should have advised me if the up trains were not running in order. In regard to the relief train, I trusted entirely to Glastonbury, who had promised to arrange the crossings. I should not hear about the crossing if it were not to occur at Wellow. I was not in the office, and I can give no account of Mr. Percy's complaint that his calls were unanswered from 11.0 p.m. to 11.13 p.m. I had been to Midford chiefly for pleasure, and I was off duty at the time. The trains appear to have met owing to a misunderstanding, and I attribute it to the crossing arrangements; but they could not meet without a mistake on the block, either at Wellow or Foxcote. I have an idea as to how the accident occurred, but I decline to say what it is, because it might implicate me. When I looked at the instrument on entering the office, I did not notice whether the needle was calling Wellow. I think I should have noticed if they had been calling "W" for Wellow. I must have heard it. A man attends to the clocks twice a week. He says on the platform, without always seeing the clock, it is such and such a time. We sometimes ask the time from Glastonbury. I supposed our clock to be right on the day of the accident. After the Bath train left, Hillard and myself went out of the office together; it would be about 11.10 or 11.12 p.m. I heard Mr. Percy calling about 11.15 or 11.16 when I returned to the office. He asked, "Where is down special?" It was not a coded message. I answered, "Down special over T"; the clerk did it under my instruction. I had no other message afterwards from Glastonbury. About 11.20 or 11.21 the telegraph wires became entangled. I examine and sign the "Line-clear book" every day. After the down Bath special started I was in the office, and heard the telegraph clerk working the instrument. I turned round and inquired what he had done. I found that he had blocked over the instrument for a train from Foxcote. I remarked to Hillard and two goods guards who were in the office, that the down train could scarcely have got to Radstock in the time. I do not think I looked at the book at that time. The train would probably run from Wellow to Foxcote in six minutes. According to the book produced the Bath special left Wellow at 11.10 for Foxcote, and the up relief train was on from Foxcote at 11.18. Thus, eight minutes had elapsed from when the Bath special left until I observed that the other train was on from Foxcote. It would take two minutes more for the train to run from Foxcote to Radstock. The needle of the block instrument in my office remained pegged over to the left as for a train from Foxcote after the collision. I did not see Hillard ask for "line clear" for the up train from Foxcote. The Wellow needle applying to Foxcote must have been released too soon, before the Bath special reached Foxcote. I do not know whether Hillard asked for it to be released, or whether it was done without his request. Nothing passed on the speaking instrument between Wellow and Foxcote. The first thing I saw between the blocking to Foxcote was the blocking from Foxcote. I saw the needle vertical between those times; and while Glastonbury was asking "Where is down special?" I would naturally look round to that question, to see whether the down special was "Over T;" and when we replied "Over T," we meant it had actually passed Foxcote. I told Hillard to send that reply, and Hillard did it, as far as I know. I told Hillard to send the message that the down Bath special had passed Foxcote, taking it for granted that it had done so from the upright position of the needle. We had received no notice by arrival signal that it had passed Foxcote. I added immediately to the message "Down over T" to Mr. Percy, "Up on from T," sending it because I saw the needle vertical. I think that while Hillard was sending to Glastonbury "Down over T," he received notice of the up train from Foxcote. I added "Up on from T" on seeing that the needle was blocked. It was just after both parts of the message had been sent to Mr. Percy that I made the remark, "I should think that train had not time to leave Radstock." I am not sure that I saw the needle vertical, as stated above. Foxcote asks "line clear" from Wellow as soon as he is asked "line clear" from Radstock, and thus a train may be only leaving Radstock when Foxcote asks for "line clear." My telegraph instruments have been working well. I cannot say for certain whether, on my arrival from Midford, and on going first into the office, the state of the block instruments. It was about two minutes afterwards, when I had been out and returned again, that I noticed it. The instrument was then blocked as for a train to go to Foxcote. I saw the pin was out, and the instrument blocked over; I am perfectly certain. Within a minute I started the train, and the needle had then been pinned over from Foxcote for the train. I went into the office for the purpose of seeing if Foxcote had pinned over for "train on line." I asked the boy Hillard if all was right before I saw the needle. I went in specially to see the state of the needle, and started the train on my own knowledge. The next thing I saw on the instrument was about 11.18, when I saw that Hillard had blocked for the up train. I am governed by the "Line-clear book" as to the time. It was then I said I thought it was quick for the train to have reached Radstock, and the up train to have come on. My opinion is that the man at Foxcote was confused, and did not know what he was doing. He is inexperienced for an emergency, and might have unpinned our needle. I do not remember whether I told Hillard to send to Glastonbury the message, "Down over T." When the needle is vertical I take it for granted that a train has arrived. What I meant the other day when I said the accident might have occurred through the crossing arrangements was, that if Radstock and Glastonbury had been in proper communication, the up train ought not to have left Radstock. It was when I returned from the accident that I noticed the "Line-clear book." The figures were 11.15 when I saw them, and the blot was there. I think Hillard is pretty accurate in making his entries. He may make a mistake. I should think Hillard was absent about four minutes, when he went to collect the tickets; it is quite possible that he should collect them in that time.

(*Hillard* says he sent the messages "Down over T" and "Up on from T," and Mr. Sleep was there; but he does not know whether he instructed him to send them.)

Sleep continues: I had intended going to bed when I returned from Midford. I remained at Wellow station for some minutes after the down train was signalled at Foxcote. It was some time between 11 and 12 that I went towards the scene of the accident. It was about 11.20 or 11.21 that I noticed the speaking instrument working very strong. I did not go at once down the line. I stopped about the station doing nothing. I do not think I noticed the line clear

book before I left for the accident. I am certain I did not do so. I went to the signal-cabin at Foxcote about 10 minutes after arriving at Foxcote. Dando told me, "You sent train on without line clear;" and I replied, I had not done so. (Dando remembers seeing Sleep there, but nothing of what passed.) Mr. Jarrett came into the signal-cabin while I was there. I met a passenger between our home and distant signals who said there was a smash. I cannot say why I stopped at the station, but it was not because I thought there might be an accident. I might have gone to bed if I chose. I might have stayed there for gossip. I had no other reason to remain. When I said I thought the Bath train had run very quick, I did not think there would be an accident. I did not realise when the messages "Down over T, up on from T" were sent, that a collision was impending.

Arthur Hillard (sworn).—I was 15 years of age in October last. I receive 7*s.* 6*d.* a week. My hours are from 8 a.m. till after the passing of the last up passenger train, due at 9.34 p.m. I am generally on duty from 8 a.m. till 10 p.m., with a holiday on Sunday. I am a telegraph clerk at Wellow, in the service of the Somerset and Dorset Railway Company. I am in charge of the telegraph instruments, and when the station-master is away I am jointly with the signalman in charge of the single line arrangements. I have to take messages and crossing orders, and to tell the engine-drivers whether they are to go on, out of course, by giving the drivers the crossing order. If I get a "Keep train" order I keep the train. The signalman does not interfere with this, his duty being confined to the points and out-door signals. Formerly, for two or three months, I had to be on duty from 5.15 a.m. to 7.30 p.m. I was not able to get up every morning at the proper time. My landlord called me. I never drop asleep over my instruments during the day, nor felt confused. I prefer coming on duty at 8 o'clock. On the day of the accident I came on duty at 8 o'clock, and was still on duty at 11 p.m. I have been telegraph-boy, and learning, for about three years. The station-master was off duty from 6.30 p.m. on the day of the accident, and I was in charge with the signalman (William Gillard). The signalman did not assist me, being otherwise engaged. I received the four messages, A, B, C, and D, already put in by Sleep. I told Mr. Sleep of the messages when he arrived at the office, and asked what arrangements were made. He then went out to let the Burnham special pass the up goods train. I should have had to manage them if he had not come back. I think I should have sent the goods on first to Bath before the Burnham special. Mr. Sleep brought the Burnham special to where the goods train had been, and told me to announce to Foxcote its arrival at Wellow, and to ask Foxcote for "Line clear" for the down Bath special by which he had arrived. The needle when I went to it was blocked for the up special. I took out the pin, announced to Foxcote the arrival of the Burnham special by four beats to the right, and then gave him three beats to the right for "Is line clear?" He repeated this, signifying "Yes." I then gave him three beats to the left, signifying "Train will start." He immediately pinned over the needle to the left for "Train on line," and I put down 11.10, the time of the departure of the Bath special. I was going out to tell Mr. Sleep that it was all right for the Bath train to start, when I met him in the doorway. He said, "All right down?" and I said "Yes." He went out and started the train. I then went out to collect the tickets of the passengers by the down train. I always have to perform that duty. I also book the passengers when the station-master is away, and when the porters are away I help with the luggage; but I never work the signals and points. It took me two or three minutes to collect the tickets. I came back to the office and cancelled the tickets with the punch. When I had done that, I looked round and saw the Foxcote block-instrument in an upright position. I looked at the clock, it was then 11.16, and I booked it at 11.15, thinking that it might have been vertical a minute sooner than when I first saw it. Then Glastonbury called on the instrument, "Where is No. 7 down special?" Mr. Sleep was in the office at the time. I replied, "Down over T." I cannot remember whether I did so myself or whether Mr. Sleep told me to do so. Then I observed Foxcote calling. I held over the speaking instrument to attend to the Foxcote block instrument, and Foxcote asked by three beats to the right, "Is line clear?" I repeated three beats to the right, signifying "Yes." He then gave me three beats to the left, signifying "Train will start," and I immediately pinned over the needle to the left for "Train on line." I entered the time as 11.18. I then telegraphed to Glastonbury, "Up special left T." Glastonbury replied, "R. T." for right. Mr. Sleep then said, "Surely, that train cannot have got to Radstock, and the up one left, in this time." I said nothing, but I thought it was rather quick. Mr. Sleep was perfectly sober. The arrival signal from Foxcote of the Bath special was not given. The rule for giving it is not always carried out; it is a common practice only to take the pin out. It is so done at all the stations where I have been,—at Sturminster (where my father was stationed) three times, Blandford, Wells, Evercreech New, Shepton Mallet, Midsomer Norton, and Wellow. In all these places the arrival signal is not given, the needle only allowed to become vertical. When I have an up train coming, and want to get line clear for a down train, I always give the four beats to signal the arrival of the first before asking line clear for the next train; when I have not both trains at once, I simply let the needle become vertical. Sometimes I cannot see Foxcote unpin and signal the arrival of a train, because I am engaged with other duties, which take me out of the office. Collecting tickets is the principal duty that takes me out of the office, and I am the ticket collector of the station. If, therefore, I come into the office, and see the needle vertical, I have to take it for granted that the train has arrived at Foxcote or Midford. I am certain that between the time when I saw the needle vertical and when I had "Is line clear?" from Foxcote two minutes elapsed. The Bath train was two or three minutes at Wellow. I saw the guard in the van while out of the office near the van. I had gone out at 11.8 before I signalled the arrival to Midford, but not before the train was standing at the station. I heard it arrive and went to see if it was all in. The guard's van was 50 yards from the office. I went to the guard's van and returned to the office before I signalled the arrival to Midford at 11.9. I also asked "Line clear" to Midford for the Burnham special before putting down the 11.9. After signalling to Foxcote at 11.10 the arrival of the Burnham special I asked "Line clear down," by giving three beats to the right, which were acknowledged, and then I gave three beats to the left. After putting down the time I went to tell Mr. Sleep what I had done. I met him and said it was all right. Mr. Sleep started the train upon my telling him it was all right. At 11.16 the needle became vertical. Between 11.11 and 11.16 I was engaged in cancelling the tickets. I have known a train to run from Wellow to Radstock in the time which elapsed between the time when the Bath special left at 11.11 till 11.18, when I gave "Line clear" for the up-relief train. It takes five or six minutes for a train to run from Wellow to Foxcote, and two minutes more to run from Foxcote to Radstock. It only took me three or four minutes to collect and cancel the tickets of the Bath special. I cannot say whether I made the erasure in the Line-clear book, nor whether I made the blot to hide the erasure. I sometimes send messages without consulting Sleep at all. The remark as to its being "rather quick" made by him was made after the message "Down over T and up on from T" was sent. It was after I had telegraphed "Up on from T," I believe, I told him I had telegraphed it to Glastonbury. He was at the further end of the

office. He must have seen the instrument. I don't know whether he saw it. I thought the message meant that the down-train had got to Radstock, and the up had left. The beat is not omitted from Foxcote daily; it is not given sometimes. This is done oftener than it ought to be. I did not know that there was anything wrong till the whistling began. That was about 10 minutes after the wires were wrong, and this was about 11.21. I entered 11.15 in the Wellow Line-clear book as 11.16, and some time next morning I made it plainer. I put down 11.15 because at 11.16 I saw the needle in an upright position, and thought the Bath special was over Foxcote. The Bath special left Wellow at 11.10, and the Burnham special came in at 11.9. I am quite certain the figure pointed out in the book was first written 11.18, and was never altered. With reference to Mr. Ashford's evidence, either he mistook my meaning or I mistook his as to 11.10 being the time when the up-special train was put on from Foxcote. It was I who sent to Glastonbury the message "Down over T, up on from T," and between the two parts of the message I took on the train from Foxcote, and if I did not do it then, I could not have done it at all. Mr. Sleep was in the office when, between the parts of the message, at 11.18, I worked the block instrument with Foxcote. I cannot say whether our clock was right or wrong. I might not know if it was wrong, and I do not know that it was wrong. Mr. Sleep told me to take off the up-train and put on the down-train at 11.9. The Burnham special came in at 11.10, and the Bath special left at 11.11. I cannot account for the trains coming into collision where they did when the down left Wellow at 11.11, and the up was put on at 11.18 from Foxcote, both times according to our clock. I thought the down-train had got to Radstock, when the up-train was put on from Foxcote.

Mr. John Vorce Jarrett (sworn).—I am station-master at Radstock in the employ of the Somerset and Dorset Railway Company, and have been so for two years. Before then I had been eight years station-master in the service of the same company at Wells and Glastonbury. My salary is 120*l.* per annum. I personally superintend the single-line arrangements, except when I am absent at change of meals and change of hours, when I leave it to W. H. John, who is telegraph clerk and booking clerk. He takes charge of the station when I am off duty. He does not collect the tickets. My hours would be from 8.30 a.m. to the passing of the last up passenger train, due at 9.19 p.m., and varying from that to 10 o' clock. I would be absent and John in charge for an hour at breakfast from 8.30 a.m. to 9.30 a.m., dinner hour from 1.0 to 2.15, tea-time from 5.30 to 6 p.m. He also takes charge from 6.30 to 8.30 a.m. before I come on duty, and he would leave his duty at 7.30 p.m. or shortly after. An assistant telegraph clerk, George Eglon, takes the telegraph duties from 7.30 p.m. and at all times when John is absent. Either myself or John would be with this assistant; he is not left in charge. It is John's duty and not mine to transmit train messages to the crossing agent, and if complaints were made by the crossing agent of train messages not being forwarded to him any fault would rest with John or the assistant telegraph clerk, who ought to send such messages when John is engaged in booking the passengers. I was on duty on the evening of the 7th August from 6.0 p.m. till the accident occurred, at about 11.21 p.m. I put in the crossing-orders received at my station from 6.30 p.m., and there might be another order or so received earlier:—K received 1.7 p.m. L received 2.14 p.m. M received 8.5 p.m. N received 9.44 p.m. O received 10.23. 'Send on No. 16 up ordinary train to cross No. 7 down special at Wellow.' P received 10.37 p.m. 'Send on No. 16 up special train (Burnham train) to cross No. 7 down special at Wellow.' After these trains came the up-relief-train for which I received no crossing-order. After message P (10.37 p.m.) I received no further message that night about these trains. The No. 16 up-special arrived at my station at 10.35 and started at 10.42. My clerk John took the message in regard to No. 16 up-special train and I signed the crossing-order and myself handed it to the engine-driver of that train on his engine. After handing that order to the driver I was engaged in clearing the platform of passengers in readiness for the up-relief-train, which we were expecting. The first I heard of that train was from the bell of the signalman, which he rang to announce its approach. I was not then aware what train it was. During the evening, and previous to this bell, which rang about 10.46, the telegraph clerk had heard, though no message was written down, that the up-relief train was running in front of the up-Weymouth train. The relief train reached me at 10.58. At 10.35 Midsomer Norton asked for "line clear" for the up-relief train. The leave was given for it to come, and it was put on block at 10.46. I cannot say when the bell rang. I did not myself make any communication to the crossing agent at Glastonbury; but when I was going into the office after the bell rang, I met John and asked him if he had heard from Glastonbury as to the relief train. His reply was "I called Glaston-" bury and was asking, and had just started with my " message, and had got as far as 'Must we' when " they stopped me and gave me 'O A' which means " 'Good.'" He added, "I have told the signalman She will go on to cross.'" I took the same view of it, and prepared all that was possible to expedite the departure of the train. I saw the green light of the starting-signal displayed for her to start. I gave the signal to the guard to start in the usual manner. I did not communicate with Wellow or further with Glastonbury. I hand in a telegram sent at 7.40 p.m. on the 7th August from Percy, Glastonbury, to all stations, "A special train will leave " Wimborne at 7.10 for Bath. I will arrange its " crossings." Having received that message, I thought I was justified in allowing the train to go on without a crossing-order, and without communicating with Glastonbury and Wellow. We had not informed the crossing agent that we had received the up-relief-train on block from Midsomer Norton. It would be his duty to inquire for it. My answer as to whether I complied with Rule 30, as to giving train advices, is that it is done as often as possible. A telegraph clerk is not allowed to persist with a message after getting O A. Whether a man would be censured or not for such persistence would depend upon the nature of it. Depending solely on the message from Glastonbury, saying he would arrange the crossings of the up-relief-train, I sent it forward. The Burnham train was telegraphed from Midsomer Norton at 10.25, when they asked "line clear" for it. At 10.25 "line clear" was given for it, at 10.35 the Burnham special arrived at Radstock, and at 10.45 it was cleared as having passed Foxcote. In regard to the next train, the 7.10 from Wimborne, at 10.35 Midsomer Norton asked for "line clear," at 10.46 "train on line" was given, at 10.58 it reached Radstock and was put on block to Foxcote. It left Radstock at 11.2, and at 11.5 it was cleared as having passed Foxcote, leaving the line clear between Radstock and Foxcote. Nobody asked any question as to whether the train ought to go away under the circumstances. The next train was the Weymouth train. At 10.58 Midsomer Norton asked "line clear" for it, at 11.19 it was put on block, at 11.29 it reached Radstock. Foxcote did not ask "line clear" for the down Bath special. The last down train that passed Radstock was No. 18, which left Radstock at 8.49, and was cleared from Midsomer Norton at 8.58. I knew the Bath special was overdue at my station. It was due to reach Radstock at 9.45, and to leave again on its return journey at 9.55. I had no information in regard to that train except what was in the weekly time-table. The up-relief-train not being in the time-table must cross at a place not appointed, but if I obtained "line clear" from Foxcote I had a right to send it forward. The crossing agent should ask for what information

he requires. It was not my duty to inform him about the up-relief train. We could not communicate further than "Must we" to Glastonbury. The instrument was engaged. I was not at the instrument, but my clerk was. I did not go to the instrument to see what messages were sent. I have no further explanation to give as to why I did not inform Glastonbury of the position of the relief train. On the day of the accident there were eight extra trains as well as the relief train. It was not necessary for the relief train to have a crossing order from us, because we had "line clear" from Foxcote. The crossing system is progressive. The down train may not have left Bath, and although I had given orders for two preceding up trains to cross the Bath special at Wellow, the orders may not have been carried out, and the trains may have run into Bath without crossing. We telegraph to Glastonbury as much as possible; we cannot do it often, owing to the instrument being occupied by other places, there being only one speaking wire for the whole circuit. There are so many stations on the circuit in communication with Glastonbury, it prevents me communicating as by Rule 30 directed, *i.e.*, freely. I have never known a case to have occurred like this considering that message from Glastonbury. It is the first time I have ever sent a train forward without a crossing-order under such circumstances. We have generally had earlier notice of the running of special trains. The excuse has been made as to our inability to send messages owing to the wire being engaged; this has been constantly the case. I have complained to Mr. Difford when I had to reply to complaints of our not having telegraphed. I went to the collision on the Weymouth train engine. I saw the distant and home-signals worked from the Foxcote cabin towards Radstock were alight, and the lamps burning brightly. I did not notice the signals on the north of the Foxcote cabin. I went to the Foxcote cabin with P.C. Furze, and found the signalman Dando much confused. I did not look at his book. I asked Dando "However has this occurred?" He immediately replied "I was "very much confused and frightened, and don't know "how I worked the signals." I told the P.C. to keep an eye upon him. I then left the cabin for the scene of the accident. The P.C. and myself got off the engine together, and whether he or I went first into the cabin I cannot say. We were there together about two or three minutes in the cabin, and then I left. I did not hear the P.C. speak to Dando whilst I was in the cabin. I did not look at the signal book at any time during my stay in the cabin. I cannot say whether the rules were hanging up. I am sure he said "He was so confused and frightened." He said nothing more than what I said at first. He was considered under me as signalman at Foxcote. I recommended him to the inspector Mr. Wood. I thought him an intelligent lad, and able to work the block instrument; he knew nothing of the speaking instrument. I knew from hearing him say so, that he was not physically able to pull over the levers in the Radstock cabin. I thought him fit for the few levers in that box at Foxcote. I trusted to him to work the block-system. Never saw him drunk; he was perfectly sober on the night of the accident. I have heard he is a teetotaller. He appeared confused when I came in. I did not notice what was the condition of the instrument. I never saw him pull over the signals at Foxcote, but I knew he could. It is easier to work the Foxcote signals than those at Radstock. I have never tried myself, but I have heard men say so. This applies to the distant-signal. I think Dando would do at that box. I would not like to say he is a sufficiently good and responsible man for preserving safety on the single line. I have felt satisfied to have him there. I have found him steady and always reliable. I do not judge whether there is a better man for that post. When he left Radstock to take charge of the box I considered him sufficiently good. I do not examine him myself, Mr. Wood or his assistant Mr. Francis does this.

William Herbert John (sworn).—I am booking and telegraph clerk at the Radstock station, and have been so for 14 months. I also book goods and parcels. I help to keep the accounts in the goods department. I very seldom collect the tickets. I get 17*s.* 6*d.* a week, and was 18 years of age last January. I come on duty at 6.30 every morning, and I leave duty at 7.30 p.m. and 9.30 p.m. on alternate weeks, excepting when the trains are late, which frequently happens. I then remain from 10 minutes to half an hour further, according to circumstances. The responsibility chiefly rests on me for advising Glastonbury from Radstock of the position of trains. As regards crossing-orders, when I am not otherwise busy, I take them. Either I or the assistant telegraph clerk take the crossing-orders and prepare them for the station-master, who gives one to the engine-driver himself, and sends a duplicate to the signalman. The signalman keeps the line-clear-book. I keep no book myself. At 7.40 p.m. on the 7th August I received and took myself a message from Glastonbury, already quoted. About 10.30 I inquired of Glastonbury "Which of the up excursion trains is coming first?" They replied, "The Burnham excursion is first, the "7.10 from Wimborne is next, and the Weymouth "and Bournemouth excursion train is last." I received that information about 10.30. At 10.23 I received a message from Glastonbury, already quoted O. At 10.37 I received the message P. There was nothing further on the instruments until the Burnham special arrived, and left, as far as I remember, about 10.40, and the next thing that happened was the notice from Midsomer Norton of the up-relief-train. When I saw the gates open at the level-crossing and the signal lowered for that train to run into the Radstock station, I called Glastonbury, and I was going to ask them "Must we keep up-special here, as she has left Midsomer Norton," but I did not send that message; when I had got as far as "Must we" they gave "Good" by O A on the instrument, and left the instrument. Neither Glastonbury nor I attempted to use the instrument any more at that time. I made the following note at the time, in shorthand, in a private memorandum book: "Tried to ask Glastonbury at 10.55 whether we "should keep up-special, but they would not hear, "and gave 'Good.'" I made that memorandum as soon as I received "Good" on the instrument from Glastonbury. I thought I might be called to account, and made the note as a precaution, to show that I had attempted to call Glastonbury, and that they had stopped me. I did not think it was right for them to do so. Afterwards I went outside and called to the signalman that the 7.10 special was first, and that she would go on, as Glastonbury had said nothing to keep her. This was on the signalman's asking me if there was an order, which I understood was a crossing-order. I went back to the office, and waited till the train arrived. About 10.58 it did arrive. The guard said the engine-driver wanted water, but neither the engine-driver nor the guard, so far as I heard, asked for a crossing-order. The station-master asked me if there was anything from Glastonbury to keep her, the up-special? I said "No," and told him that I had called Glastonbury, and said "Must we," and that Glastonbury had replied "Good." There was no consultation between me and the station-master as to whether a crossing-order was required, and it left in the usual course. It is so that such trains are usually managed. I do not remember a particular case, but in regard to such special trains it is the rule to leave the management to Glastonbury. Unless we get a "keep order" for them, we think it our duty to send them forward. I very often have a difficulty in sending messages, through the instruments being occupied. I have never told Mr. Difford, but merely spoken of it to anybody who happened to be present, the station-master perhaps. The relief train left for Foxcote at 11.2. The block-instruments are in the signal-cabin, and the speaking instrument is in the station building. I had nothing to do therefore with

any block-signals which passed with Foxcote. I suppose it was on what I told the signalman, as already quoted, that the train was allowed to start. It was a sort of understood thing not requiring to be spoken about. There was nothing unusual about it under such circumstances. I made a subsequent statement in my note-book in regard to the incident with Glastonbury (read). I can swear that I telegraphed "must," but I am not certain about "we." About three minutes after the relief train left Radstock, Glastonbury called and asked "Where," to which I replied "OA" as a retort upon what they had done to me. The following is an extract from my note-book of statement entered in the book the day after hearing Mr. Percy's evidence in this court. "I had heard "nothing of the down-special, and did not know "whether she had left Bath or not. When up-special "had left about three minutes, Glastonbury called "and said "Where". I gave 'OA.' They called and "said "Where" again; I gave 'OA' again, and afterwards told them about trains. I gave 'OA' because "they had given me the same before, and I wished "to show them that it was not pleasant to be treated "so. On inquiring I find that No. 18 down goods "the night of the accident crossed the 7.10 Wimborne "special at Shepton, the latter train having left "Evercreech junction at 10 p.m., 14 minutes after "No. 18 down was due at Evercreech junction, and "went on to Shepton to cross No. 18 down, no order "having been given. In Mr. Percy's evidence it "came out that no order had been given with regard "to the 7.10 up-special after she had left Wincanton; "be also said that no crossing had been made between "two trains between 9 and 11, besides those entered "in working time books and sheets, without his "arrangement. This appears however to have been "one;" I made that memorandum only for my own information. The first I heard of the collision was Vowles, the guard of the up-special, coming to the station. I have found it on previous occasions useless to persist in asking Glastonbury after being stopped by 'OA' because they would simply repeat 'OA' and shake up the instrument as if they were angry at being troubled by me. On the third occasion that they called me from Glastonbury as stated, I gave them the information about the trains. The substance of what I told them at that time was that I did not know where the down-train was, but that the up-special had passed. That was about three minutes after the train had left, about 11.5. I do not know whether I have spoken in Mr. Wood's presence of the pressure of business on the wire. The instruments and batteries are inspected by the man of the telegraph engineer. If I had a complaint, I should make it to the station-master. I put another note in my book after the collision as follows, I believe on the following day. "No. 16 up-train (Burnham excur-"sion) left here at 10.42. About 10.46 when up-"special left Midsomer Norton, I tried to ask "Glastonbury whether we must keep her, but they "would not hear me. Left here at 11.2. At 11.29 "a man came from Braysdown and said there had "been a collision." I expect I guessed at what time the man brought information about the accident. Mr. Jarrett has not seen my book. I have no doubt 10.55 is the time I was trying to communicate with Glastonbury, because that was the time I put down when it occurred, whereas 10.46 was put down the next day. The signals would have been lowered, and the gates opened soon after 10.46. The signalman uses the bell with Midsomer Norton. It may be once a month that I have been stopped by O.A. when trying to send a message to Glastonbury. I had made no complaint. There was no ill feeling between me and Glastonbury, and it was solely because of their stopping me on that evening that I retorted as I did. It was because I had been stopped angrily on previous occasions when persisting with a message that I did not press the message on the night of the accident. I heard there had been a collision, and, after thinking, I concluded one of the trains must be the 7.10 from Wimborne. I went to the spot on the engine with Mr. Jarrett and others, and after going to the scene of the accident I went into the signal-cabin. I found Dando alone. I believe I asked him how the accident happened. He replied, Wellow put the down train on without asking for line clear, and he had put the up train on with asking line clear, and there was the proof. He pointed to the block instrument towards Wellow which was pinned over from Wellow. There was no pin in the Foxcote instrument, I particularly noticed. I made no note of the time. My object in going to the cabin was to telegraph to Glastonbury, and I did so, saying there had been a collision, and three people killed, which was all I knew at the time. I am not sure whether it was at once or some time after, but I know I told Glastonbury, that Dando had said "Wellow put on the down train without line clear." I looked at Dando's line-clear book. I noticed that the figures 11.2 were there altered in two columns from 1 to 2. I do not know whether the figures 11.5, 11.6. and 11.6 were there. I believe he made the note at the bottom of the page "Collision took place &c." while I was there. I was telegraphing to Glastonbury and Dando kept talking to me, telling me different things, so I told him, as I could not attend to him and my telegraphing at the same time, to write down all he knew. I saw him writing, but not what he wrote. He did not ask my advice at all as to what he was writing, and I did not read his memorandum. I have not read it yet. I first heard it read yesterday at Wellow. I knew what he had written about, but not the words he employed. From what he had told me I knew the substance of what he wrote. I did not know until yesterday that Dando had filled in any figures after the collision. If he had consulted me I should have told him to put them in. I thought the 11.6 entered in the book could not be right, but I think I did not speak to Dando about it. At 10.39 I was about to inquire from Glastonbury where the down special was. I was also stopped in the same way. It was after I repeated a crossing order I was about to ask them where the 7.10 up special was. I don't know whether I completed the first word. I believe not; it was directly after I was about to repeat a crossing order. I was going to say where, and they stopped me and began to call Bath. When they stopped me I thought no more of it. I had the crossing order to attend to, and I was busy in that way. I went away and wrote out the order for Mr. Jarrett to sign. I did not tell Mr. Jarrett of that at the time. I distinctly say I was stopped by Glastonbury when trying to inquire at 10.55 and 10.39. I made no note of 10.39, because I then asked for my own information, but of 10.55, I made that note, because I might be asked about it again, it being my duty to telegraph about the train. I did not mention about 10.39 when examined the other day, because I had forgotten it. I was reminded of it by reading last Monday's evidence. It was in reading Locke's evidence, that he had been stopped by Mr. Percy, that brought it to my mind. My memory is now quite distinct, there were two messages. I am certain there were two messages stopped that night at 10.39 and 10.55.

Isaac William Horsey (sworn).—I have been 14 months a signalman in the employ of the Somerset and Dorset Company, and at Radstock for the whole time. I was previously a signalman on the London and South-Western Railway. My last station there was Isleworth. I was on duty at Radstock on the 7th August from 2.30 p.m. to the time of the accident. No. 16 up ordinary goods left me at 10.32, and was cleared from Foxcote at 10.36. I had received a crossing order for that train from Mr. John. The next was No. 16 up-special train; it reached Radstock at 10.35, and I also received a crossing-order before it started, from Mr. John, who gave it me himself. It left Radstock at 10.42, and was cleared as having reached Foxcote at 10.45. Next comes the 7.10 up-

special-relief-train from Wimborne. "Line clear" was asked for it from Midsomer Norton at 10.35; it was put on block at 10.46, reached Radstock at 10.58; asked "line clear" to Foxcote, which was given at 10.58, left Radstock at 11.2, and Foxcote signalled arrival at 11.5. At 10.58 Midsomer Norton asked "line clear" for the Weymouth train; at 11.19 it was put on block, at 11.29 arrived at Radstock. No signal was made forward to Foxcote in regard to it, because I had heard of the accident. I heard the engines whistling, and thought there was something wrong. I ran down to the office and found Eglon, the telegraph clerk. I asked him if there was anything the matter. He said there was, and that there was a collision somewhere, but he did not know where. I ran back to the box, where I was obliged to remain. The last down-train I had on that day was No. 18 ordinary goods, which left Radstock at 8.49. I cannot account for the figures scratched out under the heading of "down-trains" special, 9.29, &c., except by supposing that I must have entered an up-train in the down column, and corrected it later. I lowered the signal for the up-relief-train to leave Radstock at 10.58 or 10.59, but she did not leave until 11.2. I had orders from Mr. John to let it go on. He had called to me in the box, and said it was the 7.10 special coming, and I was to let it go on. I asked him if there was not a crossing-order required. He said, "No, it was not "necessary as Glastonbury was going to arrange "crossings." Nothing more passed, except that I said "all right." I took that as sufficient to let the train go forward. I think that while it is necessary to have crossing-orders for advertised trains, it is equally necessary for a train not advertised to have crossing-orders. I think the regulations require it. I mean No. 12 rule. I had no power to refuse to allow the train to go without a crossing-order. When a train has left me and reached Foxcote they unpin and give four beats. They omit the beats sometimes, but very seldom, and simply let the needle become vertical. Dando works with me generally at Foxcote, but the change of duty is there 4 p.m., while the change of duty at Radstock is 2.30 p.m. I do not find any difference in the working of the two men at Foxcote, and I could not tell whether I was working with Dando or the other man, so far as the mode of working is concerned. Now and then, when I have had to run down and tighten or slacken my wires, I have come back and found my needle vertical. I have no other duties to take me from my cabin. The practice referred to has not happened from Midsomer Norton; only from Foxcote. The arrivals at Midsomer Norton are signalled by shaking the instrument up, and giving one beat of a bell with the needle standing vertical. I do not know how that mode of working arose; it is not provided for in the regulations. They generally give the beats from Foxcote for arrival of trains, but they never do so at Midsomer Norton to us, nor we to them. I found that mode of working in operation, and have continued it for 14 months. I have never had any instructions to work in that way. I saw it so done while I was there learning, and continued it. I never communicate with Wellow direct. Relieving-signalman Francis has seen me work in this way. Wood, Ashford, and Jarrett are our inspectors. I cannot say they have seen me working in this way. I have done this when they have been in the box. I do not say when Wood and Ashford have been there. In what I have said in regard to the signalling of arrivals at Foxcote, I mean that I have been content to see the needle unpinned without hearing the four beats, and Foxcote has been satisfied without an acknowledgment. That has only occurred four or five times in the 14 months I have been in the cabin. I take Mr. John's order to start a train just as I would the station-master's, because he acts for the station-master in his absence. I could not leave my box to consult with the station-master; the trains were too thick. My cabin is about 100 yards south of the station. I have nothing to do with speaking instruments. My duties are to attend to the block instruments, the signals, some points, and the gates of the level-crossing, which are worked from my cabin.

Horsey, *Dando*, and *Hillard* appeared together and produced their books. In regard to the Burnham train Horsey asked for "line clear" to Foxcote at 10.40, and Dando has 10.44 as the time when "line clear" was asked. Next Horsey has noted arrived at Foxcote at 10.45. Dando has arrival timed 10.48. Dando asked "line clear" to Wellow at 10.48, and Hillard has the same time. Dando has arrival at Wellow 11.4, and Hillard 11.10. In regard to the 7.10 special-relief-train, Horsey asked "line clear" at 10.58, Dando has 11.2. Horsey had arrival 11.5 and Dando agrees with him. Dando asked "line clear" for it to Wellow at 11·6 and Hillard puts it at 11.18. Dando has time of departure 11.6 when he had obtained permission, and Hillard 11.18 as the time that he gave permission. Dando states that he put down 11.6 the time that the up relief-train left him after the accident occurred. Hillard states he asked "line clear" for Bath special at 11.10, but Dando denies it and has no entry of it. Hillard also has 11.10 as the time when he received permission from Dando, and Hillard says it left him at 11.11, of which Dando has no entry. Horsey heard nothing about that train. Hillard has nothing but his entry to prove his case. Dando says he knew nothing of the down train, and that the needle was blocked from Wellow when he sent on the relief train. He also states that Hillard must have sent a train on to the blocked section. Dando says he was alone in his cabin. Hillard thought he was alone. Neither Dando nor Hillard can explain how the accident occurred. Hillard points out the figures 11.10 when he asked "line clear" to Foxcote for the Bath special, and 11.15 as a minute before the time when he saw the needle vertical for the arrival of the Bath special as he thought at Foxcote. Hillard states Dando asked "line clear" at 11.18 which he granted, having seen the needle vertical at 11.16.

William Gillard (sworn).—I am a signalman and porter at Wellow station in the service of the Somerset and Dorset Company and have been so since the 12th June last. My duties are to look after the points and signals and porters. I work in a cabin. I work the block instruments in the station from 9.30 p.m., or after the passing of the last passenger train till 2, 3, or 4 o'clock in the morning according to the running of the trains. I was on duty at Wellow on the evening of the 7th August. I saw No. 7 down special come from Bath. It arrived about 11 o'clock. I could not see the clock. I remained in the signal-cabin to work the points and signals for the up goods train and the Burnham special. The Burnham train moved into the loop, and the Bath train moved away, and the goods train came to its place. The Bath train left immediately the Burnham train entered. The station-master passed my cabin on his way to the office, and said nothing to me. I saw him go into the office. After he passed my cabin I heard him say to the telegraph-clerk Hillard at the door of the office, which is within three feet or so of my cabin, "Take off the up train and put on the down train." I heard him say those words. He stepped into the office, and looked at the instruments, and said to me "Pull the starter for the down special." That was after he looked at the instruments. He was then standing in the doorway of the office. I was looking through the window at that end of the cabin, as I had been all the time. I pulled off my starting-signal, and the down special train ran out. The up special was then waiting to go. Still standing at the door after the Bath special went he said "Pull the starter, and let the up special run away." I pulled the starter off, after getting the order, and the up special went. The station-master was still in the office. The goods train had backed in before the up special could go. I could see the station-master turn his head towards the instruments

the second time, after he had given the order to start the Burnham up special. I remained in my cabin and he in the office until the goods train followed the up special to Bath. When the goods train got outside the starting-signal I left the cabin and went into the office. I do not know what time it was. The first time I looked at the instruments I found the instrument pinned over from Foxcote for another up train. It was on hearing a whistling that I looked at the instrument. The whistling began as I was passing to the office. I did not go into the office before the two guards of the goods train had left. I heard no remark from either of them. It would not take the Burnham special quite so long to go to Midford as it would take the Bath special to get to Foxcote. It did not strike me at the time that it was very quick for another up train to have been put on from Foxcote. The station-master, myself, and the telegraph-clerk remained in the office for half an hour. We were doing nothing, perhaps talking, but I could not say. The whistling continued for half an hour, and the station-master at the end of the time said he would go down the line to see what was the matter. Hillard and I remained in the office all night, and till between 6 and 7 o'clock in the morning. I was not talking to the goods guard Upward in the office that I am aware of, nor out of the office. I did not hear him say how quick it was for the down train to have reached Radstock. I might have spoken to him, but I do not remember what I said.

Edward Mullins (sworn).—I am a goods guard on the Somerset and Dorset Railway, and have been so two years. On the 7th August I was employed in working the Burnham excursion train. I left Burnham at 8.2 p.m., reached West Pennard at 9.15, where we waited 10 minutes for a crossing-order. Glastonbury had not sent the order. We arrived at Pylle at 9.35, and crossed the train No. 10, for which we had got the crossing-order at West Pennard. At Pylle I do not know whether the driver got a crossing-order. At Shepton Mallet we crossed No. 18 down. I reached Radstock at 10.48, and left at 10.50, with a crossing-order to cross No. 7 down special at Wellow. We arrived outside Wellow signals at 11.2 by my watch, which three days afterwards was four minutes fast. I had set it by Bath that morning. We were kept outside Wellow signals for 11 minutes, arriving at the station at 11.14. I did not notice the clock at Wellow station. The Bath train could not have left until after 11.14. We were checked by the signals at Foxcote. The driver ran past the box, and was reversing to come back, when I stopped him by the red light, and gave him the green light to go right away, because I had seen a green light from the signalman at Foxcote. We ran into the loop at Wellow at 11.14, and left at 11.15. I saw the Bath train coming in, and saw the station-master on the platform after we got into the station. I did not go into the office. I did not see the station-master go into the office before he started us away. I know Hillard; I did not see him at that time. The Bath train only waited for us to get clear, and then went away, after waiting three or four minutes at the station. I got to Midford at 11.21, and away at 11.23.

George Upward (sworn).—I am a goods guard in the service of the Somerset and Dorset Company, and have been so about 18 months. On the 7th August I reached Wellow at 10.45 p.m. with No. 16 up goods train, and waited there to pass No. 7 down special. Our train waited on the loop opposite the up platform. While waiting I talked to signalman Gillard and telegraph clerk Hillard. I asked Gillard whether the down special had left Bath. I saw that train reach Wellow about 11.13 or 11.14. I was on the up platform at that time. I did not look at the clock until we left at 11.22. The Bath train left before that. She was about two minutes at the station—no more. When the Bath train arrived at Wellow, I saw the station-master run across in front of the engine of the down train by which he had arrived. He met the lad Hillard outside the office close to the door. The boy Hillard said to Sleep, "The up Burnham is outside the signals waiting to come in." I did not hear him make any reply to the boy; but he said to me, I was to get my train up over the points to allow the up special to run up to the platform. I then went towards my engine-driver and told him what to do, and I cannot say whether Sleep or Hillard went into the office at that time. I myself had gone into the office when I arrived at the station at 10.45. As soon as I got into the office I saw Hillard unblock the needle to Foxcote for the arrival of my train. Hillard had asked me "Is train all in?" before he unblocked. I next saw Foxcote ask "Clear and put on No. 16 up special," and I almost immediately left the office and saw that the needle was then pinned over at Wellow for train on line from Foxcote. When I went again to the office was after the Bath special had left for Foxcote and the Burnham train had left for Bath. That was about 11.19 or 11.20. Mr. Sleep and Hillard were at that time in the office, and guard Cooper was standing outside the office. I looked at the instruments. Mr. Sleep said to me, "The next up special will pass you." I asked him for why, and he replied, "She is now on block from Foxcote." I rejoined, "I did not think it was possible; she could not be there in the time." He said, "Come in and see for yourself." I went in and saw the Foxcote block instrument with the pin in, pegged over to train on line. I said, "If the Bath special has got to Radstock she must have been very quick, for the Burnham special had not got to Midford." I was waiting for the Burnham train to get clear of Midford, and I knew that the Burnham train ought to get to Midford before the Bath train could get to Radstock. I said to Mr. Sleep, "I am afraid, if that is the case, there will be something wrong." He only replied, "She has not been gone very long." I then heard a whistling, and said, "She is now whistling off Foxcote signals." By that time the Burnham special was cleared from Midford and we started with our train. I was not in the office and did not see the Bath train telegraphed to Foxcote, and I cannot say whether Mr. Sleep went into the office before sending that train away. I did not hear of the collision till next morning, and was not much surprised after what I had seen.

William Cooper (sworn).—I am a breaksman in the service of the Somerset and Dorset Railway Company, and have been so for 10 months. I reached Wellow on the evening of the 7th August with last witness. Our train stopped in the loop till the Bath special arrived, and I was standing against the van when it arrived. I did not go to the office until after the down special had left. I did not note the time. I heard Mr. Sleep, speaking to me and the guard, say, "It strikes me that the up special will pass you." Both of us replied the down could never be over Foxcote yet, because she has not been gone long enough. I said the Burnham train ought to be over Midford before the Bath train was over Foxcote. I stood then between the signal-box and the doorway of the booking office. Sleep said to us, "Come and see for yourself," and I went in and saw that the up train was on the line from Foxcote, the needle of the Foxcote instrument being pinned over to the red for train on line. The pin was in the instrument. Two or three minutes afterwards the Burnham train was cleared from Midford, and we started for Midford. I heard of the collision next morning. I was hardly in the office a minute altogether.

Joshua Bishop (sworn).—I have been for two years an engine-driver in the service of the Somerset and Dorset Railway Company. On the 7th inst. I left Bath at 10.10 a.m. for Templecombe. On arriving at Templecombe at 2.40 p.m. I received verbal orders from inspector Carter to run with the engine and van

to Wimborne in the ordinary course of a passenger train due to leave Templecombe at 4.5. I left Templecombe at 4.12 and arrived at Wimborne at 5.20. After arriving there I asked inspector Perkins what I was to do, and he said I was to be at the station at 10 minutes to seven to work a special. I went to the locomotive shed and did what was requisite to the engine, and went to Wimborne station, which I left with the special at 7.25. Before leaving Wimborne Mr. Gale, the station agent, read a telegram to me, and I read it after him, saying that my train would cross No. 12 down ordinary train at Bailey Gate. The first stopping place was Bailey Gate, and I passed No. 12 down train there. I left Bailey Gate at 7.41. I asked the guard at Bailey Gate where we were to stop next, and he said, "Stop everywhere, and that will make sure." He gave me right away, and I started in the usual manner. I did not ask the station-master at Bailey Gate where else I had to cross. I had never before run with a special train without instructions as to crossing-places. After leaving Bailey Gate I stopped at Spetisbury, arrived 7.48, departed 7.49, receiving right away from the guard and station-master, but no further instructions. I arrived at Blandford at 7.57, and left it at 8.9 in the same way, and so on, until I got to Templecombe at nine o'clock, crossed three trains there, and left at 9.14. Inspector Wood said to me, "You will go steady down the banks." On leaving Templecombe I had engine and tender, 13 carriages, and two vans. I had no order to cross anything at Evercreech. At Shepton Mallet I crossed No. 18 down goods from Bath, but I had no order for doing so. Between Wimborne and Radstock I crossed six trains, at four stations, with only one crossing order. I had never worked in that way before. Wherever I have crossed out of the ordinary course I have had crossing orders given to me. I was at Radstock four minutes, the starting signal was down, and the station-master and guard gave me right away. I did not ask where I had to cross anything. I left at 11.12. On approaching Foxcote I saw the arm of the distant-signal in the moonlight partly down, and the light out. That induced me to slacken speed. I saw the home-signal was against me, but not burning brightly; it was just a simmering light, and it was almost impossible to see it until I came close to it. I stopped dead with my engine about 12 yards past the signal-cabin. The signalman was at the window, showing a red light from his hand-lamp towards me. Nothing passed between me and the signalman. I was there six minutes, from 11.15 to 11.21. I looked at my watch both times. I saw the signalman standing at the instrument towards Wellow. He came from the instrument, turned off the red, and gave me a green light to go away, but said nothing. As we started my mate commenced firing, and we were running from six to eight or ten miles an hour, and I was looking over the right side, when I saw a green light of the engine, about 20 yards away, with which I came into collision. I shut off steam, and called out, "O God, Jack." I turned round, and tried to jump, and before I could do so I was thrown on to the ground. I jumped up, thinking to run out of the way, but I was unable to do so. My leg was severely sprained, and I was bruised about the body. I saw no one in the signal-cabin at Foxcote besides the signalman. All the trains which I crossed on the way up to Radstock were ordinary trains. I sometimes, if not very late, find the lamp of the distant-signal, worked from Foxcote towards Radstock, burning; but very often I find the light out when working the 10·30 from Templecombe. About 9 or 10 o'clock it is generally burning, and also the home-signal. The distant-signal in the opposite direction is often not burning when it ought to be. It is oftener in than out, but it is frequently not burning. The home-signal is generally burning, but not always in the winter. I have complained about it to the signalmen, and they often say in excuse that they have no oil. I have not reported it to the locomotive superintendent. I ought to have done so. I did not notice the Foxcote home-signal towards Wellow. If Inspector Wood was travelling with the train, and gave me orders, I should obey them.

John Cadby (sworn).—I have been for 14 months a fireman. I was acting with the last witness on the 7th August. I left Wimborne at 7.25 for Radstock and Bath. All that my mate says is quite correct, as far as I know. The station-master came alongside the engine at Radstock and said, "Where's your mate?" He was under the engine oiling. The station-master said, "Now, then, are you ready to go?" I rejoined, "In one minute, as soon as my mate comes from under the engine." He tried to hurry us away. Nothing else passed at Radstock. There was no light, I am certain, in the distant-signal lamp from Foxcote. The arm was drooping a little from danger. The home-signal lamp was alight and burning as usual. Our engine came to a stand midway between the home-signal and the signal-box, within 50 or 60 yards of the signalman. Nothing passed between me and the signalman. There was not light enough in the box to see if the signalman was using the instrument. I heard my mate say to the guard, "There's six minutes we have been staying here," as he pulled out his watch. The signalman started us by hand-lamp. I went on firing, and as we were going round the curve my mate cried out, "Oh, God, Jack, what's this?" and I was thrown out on my head.

Samuel Evans (sworn).—I have been a goods guard for 13 or 14 months in the service of the Somerset and Dorset Railway Company. On the 7th August I was guard of a special train from Bournemouth, which we left at 6.35, 15 minutes late. Left Wimborne at 7.25, also 15 minutes late. The driver there received a message, not a crossing order, which I saw handed to him, sending us on to Bailey Gate. I was never on a train worked like that before, without a crossing order. I did not think, nor do I think now, that it was necessary to have a crossing order for that train. Some one I thought would arrange the crossings at Glastonbury. We left Bailey Gate at 7.41 after crossing No. 12. We stopped at all stations and crossed trains, but had neither crossing orders nor telegraph messages. I thought it was all right on obtaining right away from the station agent. We reached Radstock at 11.8 and left at 11.12. My watch was about two minutes fast by Bournemouth time. Nothing particular passed between the station-master and myself, except the right away. I thought No. 7 down train would have got to Radstock and returned to Bath by the time we were there. On receiving right away from the station-master we went on. In the collision my van was destroyed and I was thrown out, but not seriously injured; I had two black eyes and a cut on the head. My van was next behind the engine. At Foxcote we were stopped near the cabin. I did not notice the distant-signal; the home-signal was against us and burning. I sung out to the signalman in the cabin, "What is the matter?" but I do not know if he heard me. I looked at my watch, and entered in my book "arrived at Foxcote 11.15 and left at 11.21." I had just completed the latter entry when the book was knocked out of my hand by the collision. I found it next morning in the van. I did not see what the signalman was doing in his cabin, from where I was on the step of the van. I did not notice the signals towards Wellow. I did not go into the cabin until next morning. My watch stopped at 11.23½.

James Vowles (sworn).—I am a breaksman in the service of the Somerset and Dorset Railway Company, and have been so eight months. I was riding in the van at the tail of the Wimborne train. I have nothing to correct in or add to my mate's evidence. At the time of the accident we had 10 carriages, two horse-boxes, and two break-vans. I saw the red light against us at Foxcote, and I did not leave my van.

I saw nothing unusual at Radstock. I had no warning before I felt the shock of the collision and was knocked across my van. I went back to Radstock to give warning of the collision and stop the following train.

Thomas Trowbridge (sworn).—I am a porter at Templecombe station, and have been so about 15 months. I joined the Wimborne train at Templecombe, and was riding in the second-class break compartment in the middle of the train. I did not take the time. I did not get out of my van at Foxcote; nor did I see the signalman. After leaving I heard a whistle, looked out, saw the engine approaching, and was putting on the break when the collision occurred. I had a cut over the eye, and remembered nothing more till next morning.

John Hamlin (sworn).—I am an engine-driver in the service of the Somerset and Dorset Railway Company; 3½ years engineman, 8½ fireman, and 12 months as cleaner. I left Bath at 10.45 p.m. instead of 9.15 p.m. We were waiting at first for carriages to be attached, and afterwards for No. 18 to arrive before we started. We ought to have crossed No. 18 at Wellow. I had orders to wait at Bath from the inspector at Bath station. I reached Midford at 10.58, and left at 11 o'clock; reached Wellow at 11.8, and left at 11.13. I did not ask for a crossing order at Wellow, and think I was justified, considering that I knew nothing of the train that came into collision with me. When I arrived at Wellow the passengers got out, and I moved forward to let the goods train get over the points. I saw the starting signal lowered, and went away as fast as I could. I asked Wills the guard at Wellow how was the time, and saw that we differed two minutes, which I was fast. The guard said to me at Wellow, "Wire in; we have a lot of people to pick up at Midford." My engine was a six-wheeled coupled goods engine, and was not a fast engine. Half a minute after the Burnham train drew over the points I started away from Wellow. I cannot say what happened with the station-master at Wellow. I could scarcely realize at the time of the collision that a train was in my way. The lamp of the Foxcote distant-signal was out as usual, and the arm was nearly down to caution. When somebody else is there the signals seem to work very well. I have not seen the distant-signal lamp alight for eight or nine months. I had shut off steam because of the curve and the gradient, and when I came in sight of the home-signal I saw it was against me, and told my mate to apply the break, saying, "I supposed they could not get line clear." There was only a dim light in the home-signal. I saw the home-signal before I saw the engine of the other train. I had reduced the speed from about 18 miles an hour to about 12 when the collision occurred. My whistle was open when I saw the steam of the opposite engine over the cutting, and in a second I saw the lights. We were then only 25 yards apart. I had got the engine into backward gear when the collision occurred, and I then found myself lying by the side of the engine. I went into the signalman's box and asked how it happened, but cannot say what reply he made. I was then on my way to Radstock to stop other trains. My notion is that the signals were not perfect at Foxcote, because the signalman was not strong enough. It has been so for more than a month. I have never run past the Foxcote signals when I should not have done it. The signals at Wellow might be defective, owing to contraction or expansion of the wires. I have looked at Dando many times and thought he was not strong enough to work the signals.

Henry Pullin (sworn).—I am an assistant guard. I was goods guard for four years, and have been assistant passenger guard two years, but have not been regularly appointed as passenger guard. I receive 24*s.* a week wages from the Somerset and Dorset Company. On the 7th August I was assisting with No. 7 special from Bath for Radstock. I should have left at 9.15 p.m., and left at 10.45 p.m. It had been a very busy day, and we had not sufficient carriage room at 9.15, when the engine was waiting with three carriages, and we wanted 11 more to bring back people from Midford. We waited from 9.15 to 10.30 for those carriages; then we got them, and had to wait for the arrival of the No. 18 up ordinary train. As soon as that train arrived, the Bath foreman started us. We proceeded in due course to Midford, but I did not take the time. As far as I know, the entries in the book of the deceased guard Wills are correct. According to that, we should leave Midford at 11, and arrive at Wellow at 11.8. We had to move at Wellow so as to let the No. 16 goods make way for the Burnham special. I did not see the station-master or the telegraph clerk at Wellow. We had a tank engine and 14 carriages, of which two were break-carriages; I rode in the last vehicle of the train. We stopped about five minutes at Wellow. The rear of the train was beyond the platform which was not long enough for the train. I cannot fix the time when we left Wellow. I believe the station-master started the train, but I did not see him. When the guard Wills started the train, we exchanged signals by white lights from our hand-lamps. Wills has put 11.13 as the time of leaving Wellow. I believe his time is correct. I saw the Burnham special come in out of our way, and we started immediately. I heard the engine-driver whistle as we approached the auxiliary signal from Foxcote, and I felt the train slacken speed. Just after passing the auxiliary signal I put on my break, and had it fully applied. I did not see the home-signal. I saw the lights on the engine coming the other way, but no lights in the signal-lamps at all. I was trying to apply the break tighter, when the collision occurred, and I was knocked down in the van, but not hurt. I went towards the engine. When I noticed the home-signal about an hour afterwards there was no light in it. A few minutes after the collision I went back towards Wellow, and near the auxiliary signal from Foxcote I put down detonators, and returned to the train. The engine-driver, Hamlin, then asked me to go to Radstock and inform them. I saw the station-master. Vowles, the guard, had already informed them of the collision. Mr. Jarrett went with an engine and some carriages to render assistance at once. The arm of the distant-signal from Foxcote was drooping, it might almost be taken for caution, as we passed it before the collision. The signal was not altered by the accident.

Edward Francis (sworn).—I am a relieving signalman in the service of the Somerset and Dorset Railway Company, and have been so two years. I have been at several stations, including some time at Braysdown (Foxcote). The practice of working was the same there as in other boxes. The needle of the block instrument is vertical, except when the pin is in. If I want to give notice to Wellow that a train has passed me, I call them, and if I do not get attention I call again, and for three or four minutes, and if I do not get attention the needle is left vertical, and the proper signal is not given. But this is rare. It has been done at Wellow when I have been working at Foxcote. I have never reported any one for doing so, nor have I been reported. At Midsomer Norton, with the same rules, the arrival of trains is signalled by a bell. That is the only case of the kind on the line. At Evercreech junction from box to box we give in trains by a beat on the bell, because there we can see them. It is double line at the junction from one cabin to another.

John Grant (sworn).—I am regular signalman at Radstock. I was on duty on the 7th August from 6 a.m. to 2.30 p.m. I was in bed a mile away when I heard the whistles blowing, and thought something was the matter. As quickly as I could I went to the spot, and reached Foxcote cabin about half an hour

after the accident occurred. I found the needle blocked over for the train to go from Foxcote to Wellow. The pin was not in the Foxcote instrument. Dando was alone in the cabin. I asked Dando how he came to take on two trains at once. He said he did not do so; that Wellow had sent a train on without "line clear." He told me he had booked no time for it, and I saw he had not done so. He seemed frightened by the accident. Nothing more passed until I went away. I assisted to remove a wounded man. I went back to take off my jacket, and put it in the cabin. A police constable was then in the cabin, but not Mr. Jarrett. Sometimes we have allowed the needle to become vertical, to signal the arrival of a train without going through the form of beats. That practice has arisen from our having to leave the cabin to light the lamps or do other things. The book belonging to the Foxcote cabin appears to be in the same state now as when I saw it soon after the accident.

William Williams (sworn).—I am a signalman at Evercreech junction, in the service of the Somerset and Dorset Company, and have been so for about eight months there, and previously at the Foxcote cabin for four or five months. On the 7th August I came on duty at 3 p.m. and left at 11.55 p.m. I have in my cabin two block-instruments, two telegraph-bells or gongs, and three telegraph-speaking-instruments. I receive crossing-orders and hand them to the station-agent, who hands them to the drivers. There is a telegraph-clerk on duty from 7.15 a.m. to 8.30 p.m. When he is there in my cabin he does the telegraphy, and when he leaves that work devolves upon me. I advise Glastonbury of the departure of all trains, and of the arrival of trains that do not go further. After 8.30 p.m. I advised Glastonbury of all trains that passed me on the 7th August. The up-relief-train passed me at 10 o'clock, and I so advised Glastonbury. I advised Glastonbury of other trains after that. From 10 till 11.30 p.m. I was in the box near the instruments. I did not notice anybody calling Glastonbury, or Glastonbury calling anybody else. I saw no O.A. given, and I did not give O.A. myself. I have never been stopped by O.A. in the middle of a message. If it happened to me I should call the station again if there was no one else at the instrument. If a person were stopped twice by O.A. it would look as if tricks were being played. I have never known, when at Foxcote, the needle being allowed to become vertical without the beats to signal the arrival of trains, and it has not been done at my present station. No trains crossed, except those booked to cross on the 7th August at my station, without crossing-orders.

Edward Rhymes (sworn).—I am telegraph-clerk at Evercreech New station, and have been there about eight months, the time of my service in the Somerset and Dorset Railway. I was 14 at the beginning of this month, and get 6*s.* a week. I had a rise of 1*s.* a week last April. I generally come on duty at 7 a.m., and lately I have not got away before 10 o'clock at night. I am never later than 10, and sometimes I get away at 9. I have my breakfast before I come, and then I have an hour for dinner, and half an hour for tea. On the 7th August I was on duty till 11.30 p.m. I was at a bench a little way off the instruments between 10 and 11 on that night. I only kept a good look-out to see that our station was not called. I saw other stations communicating with one another, but I did not notice what they said. About 11.5 I saw somebody calling Wellow for about three minutes, and just afterwards I saw them speaking; but I did not notice what they said. Before that I did not notice Glastonbury calling anyone, nor anyone calling Glastonbury. I was busy with the monthly goods accounts between 10 and 11 o'clock. I collect tickets, and assist with passengers' luggage when the porters are not on duty. I book all the goods, but not the passengers. I also book all the parcels, and make up the goods accounts. I work the block-instruments when the station-master is away at meals, or off duty at night. I then have charge jointly with the signalman. I did not give O.A. or stop any message on that night, and I did not see O.A. given. Sometimes I have been stopped in the middle of a message and asked my code. I was never stopped when sending information to Glastonbury. I generally find a difficulty in sending a message, because of crossing-orders taking precedence of other messages.

Henry John Collins (sworn).—I am booking-clerk at Shepton Mallet, in the service of the Somerset and Dorset Company, and have been so for one year and eleven months. My duties are to book passengers and parcels and relieve the telegraph-clerk during his meal times. I was on duty on the 7th August from 7.30 a.m. to just after 11 p.m. I was in charge of the instruments from 10 till 11 o'clock. I had no occasion to send any messages during that hour except the T.A. (train advice) for No. 18 down goods to Glastonbury. Between 10 and 11 the following trains passed my station: No. 16 up goods, No. 13 up special, the 7.10 up special from Wimborne, No. 16 up special, and No. 18 down goods. The station-master was in the office with me at the time, but he could not see the instruments from where he was. I gave no train advice for the up-relief-train. I asked Glastonbury about 10 o'clock where the 7.10 special from Wimborne was, and they replied following No. 16 up special and would cross No. 18 down goods at Shepton. I cannot recollect informing Glastonbury when the 7.10 up special from Wimborne passed me. It is not customary to inform Glastonbury of up trains. It is of down trains. The speaking-instrument was at work all the evening of the 7th August, but I noticed nothing at all. I saw no one stop a message and give O.A., nor do I remember touching the instrument myself after making the inquiry about the 7.10 Wimborne train. I knew nothing of the collision till next morning.

Charles Townsend (sworn).—I am station-master at Binegar, on the Somerset and Dorset Railway, and have been so rather more than two years, and in the service for nearly 12 years. My station is a crossing-place. On the 7th August I came on duty at 7.30 a.m. and remained till 11.25 or 11.30 p.m. I can work the telegraph-speaking-instrument. I saw the instrument working between 10 and 11 p.m. on the 7th August, but did not notice anything that passed on it. At that time I did not see Glastonbury calling any other station, or any station calling Glastonbury, but between 11.5 and 11.20 I saw Glastonbury calling Wellow. It went on for about five minutes so far as I saw. I did not see any reply from Wellow. I did not see anything else that passed that evening on the instrument, and am certain I saw no O.A. given, or any message stopped. I did not give O.A. or stop any message myself. I generally work the block-instruments. When I am in the office the booking-clerk, Frederick Church, sometimes works the instruments under my directions, and when I am not there he works them on his own responsibility. I may have called a station to signal arrival and having failed to get attention omit the beats, and simply leave the needle vertical. It is likely that the same thing happens to other stations from us. I have gone in and found the needle vertical without our having given or received the beats. I have not remonstrated with other stations for not giving the beats regularly, and they have not remonstrated with me. Church, my telegraph-clerk, left at 8.15 that evening, the pointsman did not interfere.

William James Read (sworn).—I am station-master at Chilcompton, in the service of the Somerset and Dorset Company, and have been so for three years. It is a crossing-place. I have a pointsman, porter, and telegraph-clerk. I was on duty on the 7th August from 7.30 a.m. to some minutes past 11 o'clock. The telegraph-clerk, Alfred Lance, was there with me the whole time. I can use the speaking-instrument, and

sometimes do. I sometimes telegraph on the block-instrument. I did not notice anything passing on the instruments on the night in question between Glastonbury and others. I heard no one calling Glastonbury, nor anyone giving O.A. I did not give O.A. myself. I received the notice by telegraph from Glastonbury about the running of the up-relief-train, and nothing more in regard to it. I ought to inform Glastonbury of the position of trains, but I did not inform him about the up-relief-train. It was not necessary. If there is necessity to alter a crossing-place I communicate with Glastonbury, if otherwise I do not. That is my rule. There was nothing that could cross the up-train at Chilcompton. In signalling the arrival of trains it has happened to and from my station that the needle has only been allowed to become vertical and no beats given. It may have been through our attention being at other duties. It was rarely done. I cannot say it has been done, and I will not say it has not.

Alfred Lance (sworn).—I am telegraph-clerk at Chilcompton, and have been so for three months. I was 14 years of age on the 25th February last, and I get 5*s*. a week. My hours of duty are various. If I stay late at night I am allowed to come on late next morning. When on early duty I come at 7.30 a.m. and stay till 9.15 p.m. If the last train arrives at 9.15 I come on at 7.30 next morning. If the train did not come between 9.30 and 9.45, then I should be allowed to come on duty at 8.30 next morning. The last train is not generally so late as 9.45. I never leave duty till 9.15. For meals I am allowed half an hour for breakfast, an hour for dinner, and half an hour for tea. I do not find the hours too long. I sometimes book passengers and do accounts. I also collect tickets generally, but the pointsman collects them sometimes. I left duty about 11.8 p.m. on the 7th August. Between 10 and 11 p.m. I was making up my train-book for the day, counting up the number of passengers at the station and the money received from them. That took me half an hour. I also made up some goods accounts, and I did not notice anything going on on the instruments. The station-master does the chief part of the accounts. I did not see any station calling Glastonbury nor Glastonbury calling any other station, nor O.A. given, and I did not give O.A. myself or stop any message. I sometimes work the block-instruments. It occurs once or twice every day when the station-master is busy. I can remember that the needle has been allowed to become vertical without the beats for the arrival of a train. It has been done to us from Midsomer Norton, but not from Binegar on the other side of us.

Henry Jackson (sworn).—I am telegraph-clerk at Midsomer Norton, and have been there for about three months in the service of the Somerset and Dorset Company. Before that I had been 11 months at Stalbridge in the same capacity. My duties are to attend to the telegraphing of the trains, and I book passengers, parcels, and goods. I very seldom collect the tickets. I do not help with the luggage. I work with a bell from Radstock, but not the other way. I found it so when I came and went on doing it. On the 7th August I came on duty at 9.15 a.m. and remained till 11.10 p.m. Between 10 and 11 p.m. I was working at the goods accounts, my ordinary work. I was within a few yards of the telegraph-instruments. I had no occasion to receive or send messages in that hour. I did not advise Glastonbury of the up-relief-train. We had no train it could cross. I did not notice Glastonbury calling any other station, or any station calling Glastonbury. I saw no message stopped by O.A. and did not give O.A. myself. It would not be my duty to inform other stations of the running of the up-relief-train. The train was signalled in the usual way between me and Radstock. The beats on the bell were given for its arrival.

Joseph Morris (sworn).—I am a booking-porter at Midford, in the service of the Somerset and Dorset Company. My duty is to book passengers and attend to the general work of the station. I have been there 12 months. I can use the speaking-telegraph-instrument well. On the 7th and 8th August I was on duty from 7 a.m. on the 7th till about 10 o'clock at night on the 8th August—I should think 10.18. When I left the switch was put on, and there was no one at the station. A telegraph-clerk named Edwin Hues was on duty with me on that occasion, and it was he who was attending to the telegraph instruments between 10 and 11 o'clock on Monday night. On Monday morning only the telegraph-clerk and myself were on duty, and no one else came until the down Bath special arrived some time in the evening. Inspector Ashford and two porters then came to do duty at the station, because we had the Bath Liberal Association at Midford. I was still in charge of the station, and could not get away. There is no station-master at Midford except myself. I am in charge. We have no crossing-orders at Midford, it not being a crossing-place. In the office there are two block-instruments, and one single-needle speaking-instrument. We always signal the arrival of trains by four beats to the right. It has happened that the needle was only allowed to become vertical. I have complained to the station-master at Wellow of that practice, and he replied that he had admonished the person in charge, and it has not occurred since, that was two months ago. Sometimes they were not at the instrument to receive our arrival-signal, and sometimes they only unpinned the needle themselves without giving the beats.

Edwin Hues (sworn).—I am telegraph-clerk at Midford station, in the service of the Somerset and Dorset Company, and have been so for about 12 months. On the 7th August I came on duty at 7. a.m., and remained until about 10.18 on Tuesday night. My ordinary hours are from 7 a.m. to 9.55 p.m. every day, except Sunday. Sometimes I do not get away until 10.30 p.m. My wages are 5*s*. a week and clothes. I was 17 years of age on the 13th of last July. I was in the office between 10 and 11 on the night of the 7th August. I noticed nothing on the instrument at that time. I did not notice any one calling Glastonbury, nor anyone giving O.A. I did not give O.A. myself. I have sometimes complained to the station-master, Mr. Morris, of the long hours. On Wednesdays, Thursdays, and Saturdays I get off at 5.30 p.m., coming on duty as usual at 7 a.m. I have half an hour for breakfast, an hour for dinner, and when I am on late duty half an hour for tea.

Gilbert Slocombe (sworn).—I am ticket-examiner at the Bath ticket-platform, in the service of the Somerset and Dorset Company, and have been so since the line was opened two years ago. I collect the tickets, and advise all passenger and goods to Bath, and all goods-trains to Glastonbury. I also attend to the block-instruments for signalling trains. On the 7th August I was on duty at that place from 11 a.m. till 1 p.m., and again from 5.30 p.m. till about 1.30 on Wednesday morning. Usually I work 12 hours a day from 5.30 a.m. till about 5.45 p.m., or from 11 a.m. till the last train, with a rest between 1 and 5.30. I did not notice anything on the instruments between 10 and 11 on the night in question. I did not notice Radstock calling Glastonbury, nor Glastonbury calling any other stations, nor did I see O.A. given or give it myself, and I did not stop any message at that time. I am often asked by Glastonbury about down-passenger-trains, though my instructions confine me to goods trains. I cannot remember telegraphing the No. 7 down special on the evening of the 7th August. Nobody works the block-instruments but myself when I am on duty. I was 21 on the 8th February last, and my wages are 18*s*. a week.

Henry Quick (sworn).—I am booking-clerk at Bath station, in the service of the Midland Company, and have been so for 17 months. I was on duty on the 7th

August from 7 a.m. till about midnight. I should have left in the ordinary way at 7 p.m., but I remained making up my monthly accounts for the audit. The telegraph-clerks, Hogston and Smith, left a little before 11, and I remained alone in the office. I can work the speaking-instrument. There was a ticket-case between me and the Somerset and Dorset instrument. I might have heard a communication, but I did not. I was busy with my accounts. I am quite sure I did not notice anything that passed on the Somerset and Dorset instrument, or interfere in any way between 10 or 11 o'clock, or about that time. I do not use the block-instrument at all; only the speaking instrument. I did not stop any message between 10 and 11 on the 7th of August.

Reuben Hogston (sworn).—I am a telegraph-clerk in the service of the Midland Company at Bath, and have been so for two years or more. I was on duty on the 7th August from 7 a.m. to about 11 p.m. There were special trains running on that day. Smith, my successor, was on duty during those hours with me, and after then the office was supposed to be closed, but the booking-clerk, Henry Quick, was still there and could have attended to the instruments if required to do so. I keep no book at the office. In regard to the statement that the Bath office was remiss in sending information to Glastonbury, I explain that I had orders not to answer any question from Glastonbury until I had seen either Mr. Radway, the station-master, or the foreman, which would account for the delays. I produce the telegrahp-messages received and forwarded on the 7th August, referring to the running or crossing of trains, eight altogether. I was in the office until from 10.50 to 11 o'clock. I was near the instruments, and saw nothing passing at that time. My colleague and myself left together. I am quite sure that I did not check any message from Radstock to Glastonbury, nor did I observe anything of the kind. We usually closed business at 8 o'clock at Bath. Notice of the starting of the Bath train was sent under the prefix T.A., and is only recorded like all such messages on the train sheets. We sent the notice about 10.43 p.m. When we left the office on August 7th, between 10.50 and 11 o'clock, we left Quick there. I find on referring to the train sheet, that there is no record of the time at which No. 7 down special left Bath, because I omitted to enter it. I am certain I telegraphed it about 10.42 or 10.43. There are four other omissions in the train sheets of four other trains which I believe I telegraphed. I may have been engaged at other circuits. There are three circuits in the office, the Somerset and Dorset, Midland, and Post Office circuits. It was too much for me to attend to myself, and may account for the complaints against Bath. On the night of the 7th of August my successor was with me. The ordinary train, 7.10 p.m. from Bath, is the last train I entered in the train sheet on the 7th August. The train sheet also shows that whereas on the 7th August 21 up trains should have been reported, 16 were not reported that ought to have been reported, and only five were reported. Of the down trains four are not down as being reported, though they may have been reported without my noting them.

Frederick Smith (sworn).—I am now the telegraph-clerk at the Bath station. I was on duty with witness Hogston on the 7th August from 7 o'clock a.m. till nearly 11 at night. I did not send or receive any messages on the Somerset and Dorset instrument between 10 and 11 o'clock, nor did I notice any messages passing on that instrument in those hours. The clerk Quick was in the office between 10 and 11, and I left him there when I went away.

John Furze (sworn).—I have been a police constable in the Somersetshire police five months, stationed at Radstock. I was formerly a pointsman at Staveley on the Midland Railway. I acted in that capacity for six months. I was on the platform at Radstock, about 11.20 p.m., when I heard of the accident from one of the railway officials, whose christian name is George. I do not know his surname. He said there had been a "smash in" down below. I went for the doctor, and afterwards went with him and the station-master, Jarrett, on an engine to the scene of the accident. I lighted a fire on the bank as soon as I arrived, and then went to the distant-signal towards Wellow, at the suggestion of Pullin the guard. The arm was drooped below caution. I saw, after the wreck was cleared away, that the wire was broken. A quantity of the wreck was on the wire when I saw the signal-arm drooping. There was no light in the lamp which was there. I then came back to the home-signal, and the arm was on and the lights out. I did not notice if the lamp was there. I informed Mr. Jarrett how I found the signals. He was close by the engine. I next went into the signal-cabin for the first time, it was about 1.10. It was 1 o'clock when we looked at the signals. I asked the signal-man Dando how it occurred, and he said he was frightened to that extent he did not know. I told him he was to consider himself in my care until released by some officer of the Company. He handed me a paper then. I looked at the block-instruments and saw the needle was pinned over line-blocked, but the pin was not in the instrument. I took particular notice because I knew what it meant, viz., that it was pinned over from Wellow. I thought Dando might have been the cause of the accident and so took him in my care. Mr. Jarrett told me to have an eye on him, and that might have been the reason of my taking charge of Dando. After two hours my sergeant liberated Dando. He was not a lot frightened, and said if I would take him to Kilmerston he would be ready to go. I looked at his book. It appeared to be in the same condition then as now, so far as I know. I read through the statement he gave me and which had his name at the bottom. I can only speak as to the figures in the book applying to the down trains.

Charles White (sworn).—I am a signalman at Foxcote cabin, in the service of the Somerset and Dorset Company. I became a signalman first on the 7th December last year at Shepton Mallet, and at Foxcote since the 1st of June. On the evening of the 7th August I left Bath with the down special at 10.45. I noticed nothing particular till the collision occurred. I was riding in the second coach from the engine. I looked out at Wellow and saw the passengers get out, but I did not see the station-master or telegraph-clerk. We stayed at Wellow four or five minutes. We went along pretty fast after leaving Wellow. I did not see anything of the signal till after the accident. I heard a whistling and was looking out of the window when the collision occurred. I was thrown out; I do not know where I was pitched. The carriage in which I had been riding was smashed to pieces, and the carriage behind had mounted it. In about a quarter of an hour I think I recovered, and went to the cabin. The signalman Dando was there alone. I asked him what he had been about with us, and he said nothing. I said nothing more about it. The instrument was pinned over at Wellow I am sure. I did not look at the book. I left the cabin and went to the cottages to call up the people to give assistance. Then I returned to the cabin, and Dando said that Wellow must have sent on the train without line-clear; nothing more passed. Mr. Jarrett was then in the box, and Mr. Sleep, too, I think. Afterwards I went to the scene of the accident, and rendered assistance there. I can converse a little on the speaking-instrument. I have been learning since the 1st June, but do not find it easy. I do not attempt to use the speaking-instrument. Once or twice since I have been there Wellow has left the needle vertical without giving the beats for arrival. It has happened when I have been absent from the box. It hsa not occurred in the other direction since I have been there. There was no oil in the cabin. Mr.

Jarrett had sent us a little to use three or four days before, until we got our supply. Dando sent the can in. I never lighted the distant or home-signal towards Wellow. The home-signal towards Radstock is lit every night; the distant-signal is lit from Radstock. I cannot see it from my cabin. I noticed the home-signal lamp towards Wellow was burning very dim a quarter of an hour after the accident.

James Ashford (sworn).—I am district-inspector on the Somerset and Dorset Railway from Bath to Templecombe. I have been so for one year and eighr months. On the 7th August I went to Wellow by a special train from Bath at 2 p.m., and returned from Wellow, reaching Bath about 3.15. I then remained at Bath until the departure of No. 7 down special train at 10.42 by my watch, which was right within a minute. I went with guard Wills in the front break-van to Midford, where I left the train, and remained there till 1.20 a.m. At 11.40 I called Wellow to know where the same train was on its return journey in order that I might give information to the passengers who were waiting to proceed to Bath by it. Up to 11.40 I heard of nothing, and did nothing, except keeping the passengers back as the trains were passing. There were 500 or 600 passengers on the platform waiting to return to Bath. Glastonbury, Radstock, Wellow, and Bath were called from 11.40 to 1 a.m. by myself, the station-agent, telegraph-clerk, and porter Adams, and we could get no sort of attention. We did not know then that there was any derangement of the wires, though we found the speaking-instrument working very strong. At one o'clock we got Wellow's attention, and I sent the following message at 1.20 a.m.: "Ashford, Mid-"ford, to Sleep, Wellow. You had better walk on to "Radstock, and let me know full particulars what is "the matter with the up special train." I also left Midford to walk towards the train wherever it was. I thought Sleep would get information of the train and send it me on my arrival at Wellow. I arrived at Wellow at 2 a.m.; and when I went in the office I saw the needle blocked over, and the pin in, on the instrument at Wellow applying to Foxcote. I put my hand on the instrument, and asked Hillard "What's the matter with the up special train?" He told me, "The up special "train has run into the down special train this side "of Foxcote." I asked him what time the up special train was put on from Foxcote. He told me, I am positive, "at 11.10." Hillard was excited, but not particularly so. I told Hillard that he was not to remove the peg until the train had arrived. He then told me there were several passengers killed and injured. I then proceeded to where the accident occurred, leaving Wellow at 2.20. I did not look at the line-clear book before leaving the office. When Hillard told me there were several passengers killed and injured, I informed the porter to go to the "George" Hotel for the horse and trap to take me to Foxcote, and Hillard then said it was gone to Bath Hospital with some people who had been injured in the accident. I noticed the side-lamp of a carriage in the office, and asked Hillard how it came there. He said a passenger had brought it with him from the accident to see his way. I asked Hillard where Mr. Sleep was, and was informed that he had left for Foxcote before my telegram above quoted, sent at 1.20, reached Wellow. I went on towards the accident, and first met guard Wiley, of the Bournemouth train, then standing at Radstock. I next met Sleep, about one mile on the Wellow side of the accident. I asked Sleep about the accident, and he told me it was just this side of Foxcote signal-box, and a fearful smash—a guard killed and several passengers, and several more severely injured. I asked him the cause of the accident. He said, "I don't know." Nothing more passed between us, and he went one way, and I the other. I arrived at the scene of the accident at 2.51, and at the Foxcote cabin 3.17. I found the clock in that cabin one minute and a half behind the Wellow clock. I had noticed when at Wellow that the clock there was, to my belief, showing correct time. I asked signalman Dando the cause of the accident. He told me that "he stopped the up special "train at his cabin for line-clear to Wellow, because "the previous train had not arrived at Wellow, and "that Wellow had sent on the down special train "without putting of her on line or asking clear." I had found in walking towards his cabin that there was no light at the distant-signal or the home-signal. I also noticed that the lamp-case of the home-signal towards Radstock was down at the bottom of the post, and I saw no light from the back speck. I consequently asked Dando why the lamps were out. He told me that the home-signal lamps had been lighted, but they were short of oil, and had no oil for the distant-signal lamps, and not sufficient for the home-signal lamps. The lamp of the up home-signal had been taken down for the oil that was left in it to be used at the accident. He said the down home-signal lamp was alight when the accident occurred, and he did not know the cause of its going out, except that it was short of oil. I did not look at his line-clear book. I found the block-instrument in the cabin applying to Wellow blocked over by Wellow to train-on-line, and the pin was not in the instrument. Nothing more passed between me and Dando. I found John, from Radstock, at the speaking-instrument in the Foxcote cabin. He was working that instrument. Three injured servants of the Company were in the cabin lying down, and police sergeant Membry also came in while I was there. I also saw police constable Furze somewhere near the box when I entered it. I looked at the books for the first time, about 11 o'clock on the morning of the 9th August, when a number of officials were examining them; but did not myself particularly examine them. My duties are to arrange the Bath goods guards, and any other goods guards required; to visit the stations and signal-cabins in my district, or to make inquiries into any matters under the superintendent, and I look after the signalmen to see that they do their duties properly. If I observed anything wrong at stations I should mention it to the station-masters, and if necessary bring it under the notice of the superintendent. It is the object of my visits to find out anything that is wrong, and report upon it to the superintendent of the line, as regards the safe and proper working of the line. I go out for the purpose, at irregular periods, both of day and night. I am pretty well acquainted with the working of the men who have been brought forward here. I consider Dando a competent person for the post of signalman at the Foxcote cabin. I am positive he was capable of pulling the levers. He did not understand the speaking-instrument, and I had told him to learn it at intervals. It is not necessary that the signalman at the Foxcote cabin should know how to use the speaking-instrument, so far as regards his duties at that cabin, because he is protected by Radstock on the one side, and Wellow on the other, as follows:—if the signalman at Foxcote were to make a mistake in his block-working, he still ought to be protected, and there ought to be no danger of collision, in reference to his duties, because if it became necessary the alteration of the crossing-place would be arranged either at Radstock or at Wellow. I mean that if a down train was due to cross an up train at Radstock, and if Radstock should ask clear for the up train and block to Foxcote; and if Wellow should then ask clear to Foxcote for the down train, and block the train to Foxcote, that would not justify Wellow and Radstock to send those trains forward until they had received crossing-orders from Glastonbury "keep down train" at Wellow for up train to go on from Radstock to cross at Wellow; although we know that a signalman at Foxcote would be doing wrong to give line-clear for an up and down train at the same time. I think Dando would be a fit man to put at a crossing-place. Before he was put in charge at Foxcote he had instructions not to have two trains at the same time on the section between Radstock and Wellow. I told

him so. Mr. Wood sent Dando to the Foxcote cabin. I do not know on what day. I examined him on the 19th June in respect of the levers in the locking-frame and the block-telegraph instruments, and asked him what he would do in the case of points being wrong or dangerous to a coming train. He said he would give six beats to block line. He told me he was competent to take charge of the duties of that box. He had been working for some time previously with relief-signalman Francis. I am well acquainted with Hillard, and I heard him say here that he was 15 years of age, and received 7*s.* 6*d.* a week, and is employed about 13½ hours a day. I think him fit to be in charge of the safety of the single line. The signalmen had nothing to do with the working of the single line between 6.30 and 11 p.m. on the night of the accident; but I think Hillard was quite competent for the post. I think he would be a proper person to take charge of the single line at any station, so far as his knowledge of the telegraph is concerned. It is my duty to note the condition of signals as I pass them. On one occasion I observed that the down distant-signal from Foxcote was not lighted when it should be. That was on the 4th or 5th April. I reported the case, and was told that the lamp had been lighted and had gone out. Since that date I have not seen the lamp out when it should be lighted. I have seen it lighted since. I cannot say that it was lighted in May, or in June, or in July. I reported the case in April to the superintendent of the line. I am not certain as to whether that lamp has been lighted since, as it had been previously. I think there have not been trains sufficiently late to require it. The last train was 7.45 p.m. at that time. A train leaving Bath at 7.50 p.m. would get to Foxcote at 8.30 p.m. It might get there a little later. If a special late train had been running it would be the duty of the signalman to light his lamps for it. It is the practice of railway companies not to light their lamps when trains are not expected. I might pass the Foxcote signals every evening. I gave written instructions to the signalmen as to lighting their signals on the 22nd October 1875.

The following is a copy :—

"To be posted up in signal-box at Foxcote.

Signalman Grant, Bath, 22nd October 1875.

You will be required to come on duty in time for the first train in the morning, and remain on duty until 4.0 p.m., changing alternate week with signalman Williams, and light the down distant-signal lamp before leaving duty, when you are relieved by signalman Williams.

Signalman Williams,

You will be required to come on duty at 4.0 p.m., and remain on duty until all trains have passed, changing alternate week with signalman Grant until further orders.

Yours truly,
J. Ashford.

Acknowledge receipt of this notice."

I have seen the paper on the notice board in the Foxcote cabin, but I am not sure that Dando has seen it. It was not there on the 9th August. I have never given any instructions to Dando as to whether the down distant-signal should be lighted. The instructions referred only to winter arrangements. Dando had never complained to me of want of oil till the night of the accident. Mr. Jarrett is responsible for supplying him with oil. If the signalman had applied for oil, and Mr. Jarrett had not given it the latter would be to blame. It is not part of my duty to see there is a sufficient supply of oil in the signal-cabins. The injured men who were in the cabin were, I think, not aware of what passed between me and Dando. They were drowsing. I noticed the two cards of instructions hanging in the Foxcote cabin. The arm of the down distant-signal was drooping, but I did not mention it to Dando, because I saw wreck on the wire, and when I went into the box I saw the lever was in its proper position.

Mr. Frederick Usher Wood (sworn).—I am chief inspector of the Somerset and Dorset Railway. On the 7th August I arrived at Glastonbury, my headquarters, at 7.55 a.m. and went at 8.11 with the ordinary train to Templecombe, and returned again to Glastonbury at 10.45. I remained there attending to traffic until 12.53 when I left for Bath. I arrived at Bath at 3 o'clock and left by the 4.15 down train, and arrived at Templecombe at 6.50, where I remained attending to traffic till 9.20, and travelled by the up-relief-train in question to Evercreech junction, where I left it at 10 o'clock. I left Evercreech by the ordinary train at about 10.6 or 10.7 and reached Glastonbury at 10.35. I was looking after the special traffic. At 10.35 I went into my office and opened the trap-door which cannot be opened from the crossing-agent's office, and seeing Mr. Percy busy writing orders. I shut the trap again saying, "Oh, go on." I then opened some letters waiting for me and went out of my office and round to Percy's office door, which I found unlocked, and I walked straight in, it was then 10.42 within a minute. Mr. Percy was sitting at his table not writing, and Locke, the clerk, was working one of the instruments, I cannot say which, I think it was the one next to the Bath instrument. I said, "Where is the down special from Bath?" He replied, "Not left." I said, "Well as she has not left cancel her running, "because there is plenty of room in the up special "to take on the Midford passengers." His reply was, "Very well, I'll do so." I think he said something about other crossing-orders, and after seeing him taking up some telegraph-pads I left the office, nothing else having passed. I thought the up-relief-train would reach Midford under the circumstances of gradient, and my caution as to the banks, there being a special in front of it at 11.30. It would run from Radstock to Midford in from 15 to 17 minutes. The train ran a little faster than I expected, as I did not think she would get to Radstock at 11 o'clock. I then went to my house, five or six minutes walk from the station, where I arrived at 10.55. After going to bed I was called up about 12.15, and on looking out saw Mr. Pattison (Mr. Difford's chief clerk) and Mr. Percy who beckoned me down and I went as soon as possible. They told me of the collision and said it was very serious. I went to the station and asked a clerk to get information from Foxcote, and it was replied that the guard was killed and a driver then in the cabin injured. After collecting men and material I went to the scene of the accident and reached there about 7 a.m. I walked from Radstock to Foxcote and met Mr. Difford there. I went into the cabin and saw Dando. He was not much confused. His book was then in the same state as produced. He said nothing different as to the cause of the accident than he has stated at the inquiry. He has never varied in his story. I assisted at the spot, and went with Mr. Difford to Wellow from 2 to 3 o'clock in the afternoon. The line-clear book was examined and appeared to be in the same state as now, the blot being there, but I did not notice the erasure. We examined the station-master, signalman, and clerk, and they gave a contradictory statement to that of Foxcote. I think they said the same then as now. Mr. Percy had informed me at Glastonbury that he asked Wellow where the down special was, and he said he had the reply "down over T. and up on from T." but it was only after he had heard from Radstock that the up train had left there that he feared there would be an accident unless the trains were brought to a stand by the Foxcote signals. I knew Dando before he was appointed to the Foxcote signal-cabin. He had been working in a colliery as a miner, and made an application about two months before he got his appointment for the post of signalman at Foxcote. He was made a porter at Radstock station on the 22nd May by the superintendent. He said he would prefer being in the signal-box and I told him he might employ himself when not otherwise occupied in learning the duties. On the 6th or 7th June I was at Radstock and asked of Mr. Jarrett how Dando was get-

ting on, and he spoke very well of him, and that he was very attentive. I said he applied for the Foxcote box, what do you think of him? He replied, "He will do very well." About two days afterwards I saw relieving-signalman Francis at Radstock, I asked him what he thought of Dando, and whether he thought he would do for the Foxcote signal-box. He said he thought he would do very well. Then I sent him there and afterwards on my recommendation the superintendent sanctioned Dando's appointment. I visited Dando on the 17th June, he had gone there on the 11th or 13th, and he appeared to be conversant with his duties. I requested the district-inspector to examine him and when he certified to me in writing (copy produced) dated the 19th June 1876, that Dando, who had hitherto been working with another man, was competent for the duties, I placed Dando in charge on the following day. So far as I know he has performed his duties to my satisfaction. Inspector Ashford has told me that he had informed the signalman Gillard he was to be jointly responsible with the boy Hillard, for the conduct of the working in the absence of the station-master at Wellow. At the time, six months ago, when Sleep was relieved at 6.30 in the evening, it was arranged that the clerk and signalman jointly should take charge. It was not put in writing. I visited there, and taking the time-book in my hand, I said there are only two goods-trains to be crossed, and a passenger-train to be passed into Bath, and there is no need for the station-master to stay later than 6.30. p.m. If the superintendent had known that the station-master left as he did on the day of the accident he would have severely reprimanded him, even if there had been no accident. It surprised me very much to hear he had been absent, and he was not justified in doing so. I did mention to him that it would have been better if he had stayed away altogether. It was a breach of the Company's rules for the station-master to allow Hillard to act as he did in ordinary working. I think it was an exceptional case. It is understood that the signalman takes charge of the station in the absence of the station-master. There is no doubt Hillard had assumed too much. I was not aware that there was a peculiar method of signalling arrivals between Midsomer Norton and Radstock. The bell was put there to assist in drawing attention for the level-crossing, but not to serve the purpose it has been used for. At busy times I have heard that ordinary messages were delayed by Glastonbury's crossing-orders. It would be better to have a double wire on that circuit. I have had cases of clerks partly receiving messages not intended for them, and then shaking up the instrument. I have failed to detect the guilty clerk. There was no one on duty at Masbury who could have given O.A. to Radstock as represented. I heard of the up-relief-train for the first time at Templecombe at 7.55. I think the driver of the up-relief-train should have had a crossing-order at Radstock for Wellow. It was the duty of the station-agent at Radstock to give it to the engine-driver, and not the driver's place to ask for it. I think if Radstock had been stopped 20 times he ought not to have let the up-relief-train go without a crossing-order from Glastonbury, knowing that he had a down train overdue. Mr. Percy appears to have relied on Radstock to inform him of the position of the up-relief-train, and that the Radstock station-master would never have allowed it to go without communicating with Glastonbury. Mr. Percy, after saying he would arrange the crossings of the up train, should have made inquiries no doubt, and I should myself have asked Radstock and other stations about it, being an extraordinary case. I have no recollection of a message like that of Mr. Percy's, "I will arrange its crossings." The words were unnecessary; it must have been either Mr. Percy or his assistant who should arrange crossing-places. Inquiring about trains is voluntary on the part of the Glastonbury crossing-agent; it is not his duty under any circumstances under the rules. It was the Wellow station-master's duty also to obtain a crossing-order before despatching the down Bath train, because although he might not have known of the up-relief-train, he ought to have known that another up train—the Bournemouth excursion—was overdue at Wellow. It would be taken for granted that Sleep would remain on duty on an occasion like the 7th August, but he was not specially instructed of it. (Mr. Ashford remembers a case where Sleep was on duty after 6.30 p.m. to attend to a special train, since the arrangement of six months ago.) Sleep being off duty it was the duty of Hillard to obtain a crossing-order from Glastonbury, and afterwards to act jointly with the signalman as to carrying out the instructions. Mr. Percy seemed alive to his duties that night at Glastonbury, and Locke also, but I did not speak to the latter. My room is only used by the station-master and myself. There was no one but the boy in Percy's office and himself when I went in. The practice of treating vertical needle as signal of arrival has never been reported to me; nor have I detected it. On the first occasion I should severely reprimand whoever did so; if repeated, I should report him to the superintendent. If he has several other duties to perform it affords some excuse to anyone doing so. I don't think that practice has had anything to do with this accident. I should say Wellow would always give the four beats, having a train just arrived and wanting to ask "line-clear" for another.

Mr. Edward Peacock (sworn).—The statement I produce and which has been read to me is correct. It is as follows:—

On the evening of the accident my intention was to leave Bournemouth by the ordinary 6 p.m. train; it was very full, and I was informed another train would be made up and start directly, as the ordinary train, stopping at all stations the same. I took a seat in a second-class carriage, at the rear end of the train, wherein were 10 others who all got out at Evercreech junction. Our train started about half-past six or twenty minutes to seven. I did not particularly notice the time at starting; but on nearing Evercreech junction, from remarks made by other passengers, it was near upon 10 o'clock by my watch, just previous to which the moon began to rise very brightly. There were no lights in the carriage. Stayed some little time at Evercreech, where a train was waiting, I think to take passengers on to Wells, &c. A great many passengers got out; all in fact that were in the same compartment as myself, I being the only one left; no one else got in after. Whilst waiting at Radstock I particularly noticed the time, it was 10 minutes after 11 o'clock, and as the porters and guards were going the whole length of the train, calling out were there any passengers for Wellow or Midford, I concluded the train would run through to Bath, and, consequently, I should be home in good time. I threw myself at full length on to the seat. We had not started but a little time when I heard the break-whistle of our engine, and our train came to a standstill, but very gradually. After laying a minute or two, I found we did not go on. I got up and looked out of the window. The window was about half up, so that I could stand upright. As I was looking, with my arms resting on the window, I saw what I thought at the time was the end carriage of another train in front. I could hear voices as though the drivers or guards were calling or speaking to the guards in the other train. Just then the red light reversed to a green; our train immediately moved on. I then saw what I thought to be the end of another train was a signal-box; the man inside just then crossed from one side to the other; he had on only his trousers and shirt. I noticed that the light I saw reversed was from a hand-lamp that was then placed on the shelf or board facing Radstock. As I came opposite the signal-box I again threw myself at full length, with my arms under my head, along the seat towards the engine. I had no sooner done so than there was a tremendous crash. I was thrown to the opposite side of the carriage, and back on to the floor between the seats in an instant of time. I thought we had run into another train. "Was" the "sides" or "roof" of the carriage coming in? Finding I had the use of my limbs I immediately jumped up,

and out of the carriage into a potato field; but on getting out I could see (it was just upon a curve) it was another train into which we had run. The first person I saw was the guard Evans; he was standing apparently dazed, with the blood running down his face. I spoke to him. Just then another guard, a young fellow, got or stumbled out of the débris; he was bleeding from his face. I spoke to him. He did not seem to be quite conscious. Just then I heard some voice, and saw the poor fellow Godfrey jammed between the buffers and the end of a carriage, with a whole mass of wreck on the top of him. I asked him if he was conscious; he said yes. I asked his name; he told me Wm. Godfrey, of Radstock. At that time another guard came round from some part of the train; he did not seem hurt, and I asked him or told him to pull himself together, as this was a bad affair (pointing to the poor fellow Godfrey,) and just then saw one of the drivers or stokers, who was trying to pull himself up to the handle of the break. He seemed very much hurt; but I could render him no assistance, as there was a quantity of the wreckage between us. I asked him, the guard, if I could go backward or forwards to prevent anything else running into the wreck? He just then seemed to recover himself, and said, "Oh, yes, come along here." He then went a few paces towards Radstock, and then turned back to the end of the Bath train, and took down the side-lamp from the end of the train, and told me to go towards Wellow, but to be sure and keep the red light in front, and he would put down some detonating-signals. I immediately ran on towards Wellow, calling out as I went along, but previously whilst or immediately upon speaking to the poor fellow Godfrey I looked at my watch to see the time, as I thought it would be useful, it was then just 20 minutes past 11; I scribbled it on a letter at the time as there should be no mistake. There was no signal-light between the meeting of the trains on the line and Wellow, as not being acquainted with the neighbourhood I was particularly on the look-out for any signal. About 300 yards from Wellow I met some one coming towards me a shouting what was the matter. I told him; he told me he was the station-master at Wellow, and that it was the above distance. He asked me to go back with him. I asked him how far it was, he said about two miles or more, and that it was about 300 yards to Wellow station. I asked him if there was no one at the station who could telegraph; he said yes, but that the communication was stopped from Radstock. He said that he was afraid something had happened from the continued whistling of the engine (which could then be heard); he hurried on towards Radstock, and I towards Wellow station, just this, Radstock, side of which I met other persons and the telegraph-boy, who I told to come back and see if he could not get through to Bath with information; he said it was no use to try, as they closed at 8 o'clock. I went with him to the office, and begged him to try and call Bath or somewhere else where he could get through to; he worked at the instrument for several minutes, but without effect. I then knocked up the landlord of a public-house and hired his horse and conveyance, and drove with all speed to the Midland Railway at Bath, and told the manager what had occurred, it was then exactly half-past one o'clock. I asked him if I could be of any assistance if I went back with him. He thanked me, and said I could not, he would do his utmost. I then hastened home for reasons before stated. I was under the impression that everyone who may have been in the carriages must have been dead, but I did not think there could be many people in the train. I thought all the carriages in the Bath train were empty, as the guard that gave me the lamp said it was a lot of coaches to take the people home from Midford. Up to the time I left the scene of the accident, with the exception of those already mentioned, there was no other person about, and not a sound to be heard with the exception of the whistle from the engine.

The telegraph-boy at Wellow, Hillard, did not seem to know of the up-relief-train which came into collision. It was somewhat difficult for me to make him know what train it was. If there had been a light between the point of collision and the Foxcote cabin I must have seen it, but I did not see any such light.

Observations.

In order that the above evidence, and the bearing and importance of different portions of it, may be better understood, it is necessary first to reduce it to the form of a condensed narrative. It will then be more easy to sum up the defects and causes which have contributed to produce this most serious collision.

It will be observed, in the first place, that the traffic on the single-line of the Somerset-and-Dorset Railway is worked by telegraph, and that, under the printed regulations in force, the safety of the public, as against the danger of engines or trains meeting each other whilst travelling in opposite directions on the single-line, is provided for (1) by the employment of a crossing-agent at Glastonbury, who is specially charged with the duty of arranging for the crossing of trains running out of course, or not according to the printed time-tables; and (2) by the use of block-telegraph-instruments in the hands of the station-agents, whose duty it is to take care that no two or more trains are allowed to be between two block-stations at the same time. But the Company's regulations for single-line working do not contemplate or provide for, as regards most of their provisions, either the case of a train running without a previously arranged time-table, or the interposition of a signal-cabin without a crossing-loop, such as the Foxcote signal-cabin, between the Radstock and Wellow crossing-stations.

In proceeding next to consider the circumstances more immediately connected with the present collision, it would appear, that for Monday, the 7th August, which was a bank-holiday, arrangements had been made and time-tables issued for the running of special trains to and from different stations; and further, that the superintendent-of-the-line, on finding that the 8.11 a.m. train, by which he travelled on that day from Glastonbury to Poole, was heavier than was desirable, determined to divide it on its return journey into two portions. After having ascertained that he could obtain an engine and carriages for the proposed relief-train, he despatched at 4.19 p.m. a telegram from Templecombe to the crossing-agent at Glastonbury as follows:—"I "have sent one of the engines of 12.50 up goods back to Wimborne, running to time

" of 1.50 down. It will work from Wimborne to Bath as 6.10 ordinary, which train " will follow special with excursion passengers."

The crossing-agent, thus instructed, first advised all stations from Templecombe to Wimborne, commencing at 4.23 p.m., that a special engine had left Templecombe for Wimborne at 4.10 p.m., crossing No. 14 up-train at Blandford; next telegraphed to the Wimborne station-master at 5.48 p.m. to advise him as to when this up-relief-train would be ready to leave Wimborne; and, on learning that it would be ready to leave that station at 7.10 p.m., advised Wimborne, Bailey-Gate, and Blandford that a special train would leave Wimborne at 7.10, crossing No. 12 down ordinary train at Bailey Gate, and telegraphed at 7.18 p.m. to all stations (but not to Foxcote), "A special " train will leave Wimborne at 7.10 for Bath. I will arrange its crossings." He also sent a message to Templecombe at 9.7 p.m., "Keep up-special-train at Templecombe to cross No. 17 down-ordinary-train. Repeat." But he did not arrange for a crossing at Shepton-Mallet with No. 18 down-train, because it was not due to leave that station until after the arrival of a Weymouth train running behind the up-relief-train.

This up-relief-train, then, as it may best be called, to distinguish it from other trains, left Wimborne at 7.25, and was reported by telegraph to the crossing-agent as having done so. He did not arrange for its crossing the down-Bath-special with which it came into collision, because that train was due to reach Radstock and to leave Radstock again for Bath before the up-relief-train could arrive at Radstock. It was also reported to him as having left Evercreech junction at 10 o'clock. The crossing-agent heard nothing further about it until after the collision occurred; but it reached Wellow at 10.58, according to the book of the signalman Horsey, who noticed on the following day that his clock was five minutes slow; or at 11.8, according to the engine-driver, and also by the watch of guard Evans, which was, he believes, two minutes fast,—consisting of an engine and tender, 10 carriages, two horse-boxes, and two break-vans.

When the up-relief-train thus reached Radstock, there was overdue in the opposite direction a down-special-train (No. 7) from Bath, to the progress of which it will next be necessary to refer. This train, due to leave Bath at 9.15 p.m., for the purpose of running to Radstock, and picking up on its return journey some 500 or 600 passengers at Midford, was delayed in starting from Bath, first, because there were eleven carriages wanting for it, and, secondly, because an up-train (No. 18, ordinary), which was to cross it at Bath, had not arrived. It finally left Bath at 10.45 p.m., an hour and a half late, and reached Wellow at 11.8, consisting of a tank-engine and 14 carriages, of which two were break-carriages.

The position of affairs, therefore, shortly before the collision, was as follows:—

Of the two trains which came into collision with one another, the up-relief-train reached Radstock at 10.58 according to the book of the Radstock signalman, or 11.8 according to the engine-driver and guard, and the down-Bath-special-train reached Wellow according to the engine-driver Hamlin, and the guard Pullin, at 11.8, and about the same time by the Wellow record-book. The station-master, Jarrett, and his telegraph-clerk, John, were on duty at Radstock. The Wellow station-master, Sleep, returned to his station by the down-Bath-train, at, as he says, 11.8 or 9, and resumed his duties there with his telegraph-clerk, Hillard. Between them, at one mile from Radstock, and rather less than three miles from Wellow, was the Foxcote signal-cabin, at which Dando, the signalman, was alone on duty. The crossing-agent at Glastonbury had not heard of the trains since the up-relief-train left Evercreech junction at 10 o'clock, and the down-Bath-train left the Bath ticket-platform at 10.48. He had not received nor obtained advice from either Wellow or Radstock, and the station-masters at those places were without instructions.

The down-Bath-train being overdue at Radstock, the up-relief-train could not properly, according to the spirit, though not the letter, of the regulations, leave Radstock (1) without instructions from the crossing-agent, and (2) without its being taken on block from Foxcote. The Wellow station-master had no means of knowing anything of the running of the up-relief-train; but another train, following it from Weymouth, was overdue at the Wellow station, and the down-Bath-train could not properly leave Wellow (1) without instructions from the crossing-agent, and (2) without being taken on block from Foxcote. The signalman, Dando, at Foxcote, could not properly, in the working of his telegraph-instruments, afford permission for the up-relief-train from Radstock, and the down-Bath-train from Wellow, to approach his cabin at the same time; nor could he properly, when the up-relief-train reached him from Radstock, allow it to proceed towards Wellow until he had received notice of the arrival of a preceding Burnham-special-train at Wellow.

The mistake of telegraph-working which, in the absence of proper crossing arrangements, was the immediate cause of the collision, lies between the station-master,

Sleep, and the telegraph-clerk, Hillard, at Wellow, on the one hand, and Dando, the Foxcote signalman, on the other hand.

The case of Wellow is briefly to the effect that permission was received in due course on the block-instrument to send on the down-Bath-train to Foxcote; that it left Wellow at 11.10; and that its arrival at Foxcote was announced, not in a proper way, but by the needle being found vertical at 11.16, and 11.15 was therefore entered in the record-book as the time at which that train reached Foxcote. It is then admitted that at 11.18 Foxcote obtained permission in a proper manner to send on the up-special-train to Wellow; and, indeed, the block-instruments at the two places remained pegged over from Wellow, in proof of such permission having been granted, for many hours after the collision.

The case of Foxcote is, that the up-special-train was detained at that cabin, on its way towards Wellow, because the arrival of the preceding Burnham-special-train had not been announced; that after the arrival of the Burnham-special-train was reported from Wellow, it was two or three minutes before the attention of Wellow could again be obtained; that permission was then received in due course for the up-special-train to proceed to Wellow; that it was started at a time entered subsequently to the collision as 11.6 (which was admittedly unreliable, and was proved by other evidence to be incorrect); that shortly afterwards came the crash of the collision; and that no notice whatever had been given in regard to the down-Bath-train.

It being thus admitted that the proper signals were exchanged on the instruments in regard to the up-special-train, the point to be determined on this part of the subject is whether any signals were exchanged between Wellow and Foxcote, as alleged at Wellow but denied at Foxcote, in regard to the down-Bath-train.

First, as regards Wellow:

Sleep, the station-master, reached Wellow by that train. He states that he saw the needle of the instrument blocked over, as if for that train to proceed to Foxcote, before he instructed the guard to start it. He afterwards saw the needle blocked over as if for a train from Foxcote. He is not sure whether he saw the needle vertical, which Hillard alleges, between the blocking over for a train to and that for a train from Foxcote; but he communicated with Glastonbury that one train had gone from him and the other was approaching him, by first telegraphing "down over T," and adding immediately "up on from T"—because he had seen the needle vertical, and had also seen the needle blocked over for a train from Foxcote. He then made the remark, "I should think that train had not time to leave Radstock." About 11.20 or 11.21 he noticed the speaking-instrument working strongly, from the entanglement of the wires.

Hillard, the telegraph-clerk, states that Sleep brought the up-Burnham-special-train into the station, and told him to announce its arrival to Foxcote, and ask for line-clear for the down-Bath-train. The needle was blocked over for the up-train. He took out the pin, and exchanged, first the beats necessary for announcing its arrival, and then the beats for the down-train to start; and, the needle having been pinned over from Foxcote, he put down in the record-book 11.10 as the time of the departure of that train. He was going out to tell Sleep; he met him in the doorway; he told him all was right, and Sleep started the train. He went out to collect the tickets of the passengers by the down-Bath-special, which took three or four minutes; he came back to the office, and cancelled the tickets with a punch; and, looking round, he saw the needle of the Foxcote block-instrument in an upright position, at 11.16 by the clock. He booked, therefore, the arrival of the down-Bath-train at Foxcote at 11.15. About a minute or so later he observed Glastonbury asking "Where is No. 7 down-special?" He replied, "Down over T." Immediately afterwards he exchanged signals with Foxcote for the departure from Foxcote of the up-relief-train, pinned his needle over to train-on-line, entered 11.18 in his book, and then telegraphed to Glastonbury "Up-special left T." Sleep said, "Surely that train cannot have got to Radstock and the up one left in that time!"

The evidence of Sleep and Hillard, condensed as above, for this particular subject, is circumstantially given, but it presents many points of difficulty. If the down-Bath-train had left Wellow, as they state, at 11.10 or 11.11, it would have been far beyond Foxcote before the time when the collision occurred, about 11.21, 247 yards on the Wellow side of Foxcote, and within less than three miles of Wellow. The Wellow clock was as nearly right as possible, according to the district-inspector, who compared it with his watch after the accident. If the other evidence is to be believed,—and it appears to me to be reliable,—the down-Bath-special could not have started at 11.10 or 11.11, because the up-Burnham-train was not admitted to the station till 11.14, according to the watch of the guard, which had been set at Bath that morning, and was four minutes fast three days afterwards. The guard, Upward, of No. 16 up-

goods-train above referred to, and his breaksman, Cooper, who was waiting to follow the up-Burnham-train to Midford, on finding, at 11.19 or 11.20, that the up-relief-train was on block from Foxcote, said, "If the Bath special had got to Radstock she must be very quick, for the Burnham special had not got to Midford." Having seen the two trains start, he knew that the Burnham train ought to have reached Midford before the Bath train could get to Radstock. According to the book of the deceased guard (who was killed in the collision) of the down-Bath-train, and the evidence of the engine-driver, that train left Wellow at 11.13, and it appears to have travelled towards Foxcote as fast as a six-wheel-coupled goods engine could well take it. These discrepancies as to time are rendered still more serious by the condition of the Wellow record-book. There has been an erasure, and there is a blot of ink over it at the figures 11.15, purporting to represent the arrival at Foxcote, as reported to Wellow by the vertical needle, of the down-Bath-train, which never reached Foxcote; and the figures 11.18, entered as the time when the up-relief-train was taken on block from Foxcote, have apparently been altered from 11.10, the time named three hours after the accident by Hillard to Inspector Ashford as that at which he had received it on block from Foxcote. There is, further, a contradiction between Wellow and Glastonbury as to the message, "Down over T., up on from T.," which the crossing-agent states that he took from the instrument as one message without any break in it, about 11.12 or 11.13. Hillard states that he sent the message in two parts, and that he exchanged signals with Foxcote for the up-special-train between sending "Down over T.," and "Up-special left T.," which is his version of the latter part of it.

These difficulties and discrepancies would, of themselves, render it impossible entirely to rely on the evidence of the station-master and telegraph-clerk at Wellow. The evidence, directly opposed to it, of Dando, the Foxcote signalman, which must next be considered, is of a simpler character.

Dando says he first received notice of the up-special-train at 11.2, and he brought it to a stand close to his cabin at a time marked as 11.5. He waited for about four minutes, till the up-Burnham-special-train, which preceded it, had been cleared from Wellow at 11.4. He then tried for about two minutes to obtain, and at length attracted, the attention of Wellow, and received permission to send on the up-special-train to Wellow. He had no notice whatever, and exchanged no signals, in regard to the down-Bath-train. He entered 11.5, 11.6, 11.6, in his record-book after the collision, as the times of arrival and departure of the up-special-train; and noted 11.6½ as the time of the collision, and made a memorandum of the occurrence, all at the suggestion, but not at the dictation, of John, the telegraph clerk from Radstock, who visited his cabin, and was engaged in telegraphing thence to Glastonbury, after the collision. He wrote "special 7" in his record-book, in readiness for entries of the times of the down-Bath-train; but they were never filled up.

This evidence of Dando is wrong and contradictory as to the times given for different occurrences. It would appear from the statements of the engine-driver and guard of the up-special-train, that it reached Foxcote at 11.15 p.m., instead of 11.5 p.m. as entered by Horsey, the Radstock signalman, and by Dando, in their record-books; and that it was detained for six minutes at Foxcote; and the collision occurred soon after 11.21, as it left Foxcote. The book of the guard, Evans, was knocked out of his hand by the shock of the collision, just as he had completed the entry "11.21" for the time of the train leaving Foxcote. But Dando has never wavered on one point. His statements shortly after the accident, his written memorandum, and his subsequent evidence, all agree in the positive assertion that he had received no notice of and had no reason to expect, the down-Bath-train, when he allowed the up-special-train to leave Foxcote for Wellow.

Having regard to the evidence and actions of all the parties concerned, and to all the circumstances of the case, there can be no reasonable doubt, in coming to a conclusion, and deciding between the distinctly contrary statements from Wellow and Foxcote, that the station-master and telegraph-clerk at Wellow, in sending off the down-Bath-train to Foxcote, omitted to exchange any signals with Foxcote in reference to it; that the blame in this respect rests entirely with them; and that the Foxcote signalman, not having had any notice of that train, and having received permission to forward the up-special-train to Wellow, was justified in starting it, as he did, just before the collision occurred. But whatever conclusions may be arrived at on these points, a distinct and most serious responsibility clearly rests on Sleep, the station-master at Wellow, for having (at 11.18 according to his record-book) given permission on the block-instrument for the up-relief-train to leave Foxcote, without allowing sufficient time for the down-Bath-train to reach Radstock. As there was no crossing-place at Foxcote, it was necessary that the down-Bath-train should get to Radstock before any up-train could leave Radstock; whereas the down-Bath-train had not time even to reach Foxcote before the collision.

The next important point to be discussed is why the crossing-system also failed.

The two trains which came into collision reached, the one Wellow, the other Radstock, about the same time, say, 11.8; and they started, the one from Wellow about 11.14, and the other from Radstock also about 11.14, both towards Foxcote, where there was no crossing-loop. It was, looking to their times of running, the duty of the crossing-agent to arrange for their crossing at either Wellow or Radstock; it was the duty of the various station-masters to advise Glastonbury freely of their running; and it was the duty of the station-masters not to send forward a train to cross another train out of turn, without first receiving, and handing to the engine-drivers, proper crossing-orders or telegraph-passes. These duties were in the case of these two trains, as regards the two stations, Wellow and Radstock, wholly neglected. Mr. Percy, the crossing-agent, admits that no arrangement was made for the crossing of the up-special-train from Wimborne by the down-special-train from Bath, with which it came into collision, "because the train from Bath was due to reach Radstock, "and to leave Radstock on its return to Bath, before the up-special-train was likely to "reach Evercreech junction." He first heard of the late departure of the down-Bath-train on asking about it at 9.50. He afterwards ascertained that it had left Bath at at 10.23, which turned out to be a mistake for 10.43, and that it had passed the Bath ticket-platform at 10.48. He had previously been informed, first that the up-special-train would be ready to leave Wimborne at 7.10, and afterwards that it had left Wimborne at 7.25. At 7.40 he telegraphed to all stations, "A special train will leave Wimborne at 7.10 for Bath. I will arrange its crossings." And he arranged its crossings, of No. 12 down ordinary train at Bailey Gate, and No. 14 and No. 17 down ordinary train at Templecombe. He heard further of the up-special-train up to and from Evercreech junction, and knew that the down-Bath-train had left the Bath ticket-platform at 10.48, and that the up-special-train had left Evercreech junction at 10 o'clock; but he neither asked for nor received any further news of these trains until 10.59. He states that he or his clerk were calling Wellow, to ascertain the position of the down-Bath-train, from 10.59 to 11.12 or 11.13, when he received the message previously referred to, "Down over T, up on from T." But inasmuch as the up-special-train was not sent forward from T (Foxcote) until 11.21, it must have been after 11.21 when Wellow sent that message. So that, in fact, Mr. Percy could not, apparently, have heard of either of these trains after their leaving, respectively, Bath and Evercreech, until about or after the time when the collision occurred. It was not, he says, until after he had received that message that he called Radstock, though he gives the time for it as about 11.5; and he was informed, in reply, that "the down-train was not in, and the up-train had left."

In excusing himself for not having arranged a crossing between these two trains, Mr. Percy further considered it the duty of Radstock to inform him of the approach to that station of the up-special-train, when notice of it was received from Midsomer Norton; and the duty of Wellow to inform him of the approach to that station of the Bath-down-train, when notice of it was received from Midford. And on this point arises one of the most serious questions in the whole case. According to the evidence of John, the telegraph-clerk at Radstock, he asked Glastonbury, at 10.30, "Which of the up-excursions is coming first?" and was told in reply, "The Burnham "excursion is first, the 7.10 from Wimborne is next, and the Burnham and Weymouth "excursion is last." He (John) says he attempted, at a time which he states at 10.55, but which would apparently have been later,—when he saw the gates open at the level-crossing, and the signal lowered for the up-special-train to run into Radstock station,—to ask Glastonbury, "Must we keep up-special here, as she has left Midsomer Norton?" But when he had got as far as "Must," he was stopped by O.A., which is used on this line as a terminal, and was an exceptional mode of refusing to receive a message. Mr. Percy, and his clerk, Locke, deny that such a message was attempted to be sent, or was so stopped, at or about that time; but Mr. Percy admitted, after hearing John's evidence, and after a portion of his own evidence subsequently given had been read to him, that such an occurrence took place at 10.39. Radstock tried then to say something, and was stopped by O.A. John, however, had made a memorandum at the time, in regard to the alleged attempt at 10.55; and had further written down a statement, not volunteered by himself, but accidentally discovered in his memorandum book during the inquiry, in which he explained that he had also replied O.A. to Glastonbury, when they subsequently tried to attract his attention, in return for their having stopped his message, which "was not pleasant." And it was then admitted that John had thus twice replied to a message from Glastonbury by O.A. A suggestion was made that O.A. might have been given by some other station on the circuit in stopping the alleged message from Radstock timed at 10.55, and the matter was so important that all witnesses were examined from the different stations who could throw any

light on the subject. The result was that the contradiction between Radstock and Glastonbury remained, directly affecting the credibility of the persons concerned at these stations; and it must be added that the Glastonbury telegraph-clerk, Locke, when pressed on the subject, wavered in his denial. The excuse of the Radstock station-master and telegraph-clerk for sending on the up-special-train without a crossing-order, rests partly on the basis of their having attempted to send this message, and of its having been refused, and partly on the ground of the crossing-agent having undertaken in the telegram at 7.40 to arrange the crossing-places of the up-special-train. The excuse of the crossing-agent for not having arranged its crossing by the down-Bath-special is, on the other hand, that he had not received the information which ought to have been furnished him from Radstock and Wellow, of the running of the trains, to enable him to do so. In considering all the evidence on this subject, and the way in which it was elicited, it is not possible to come to any other conclusion than that there was improper wrangling on the instruments between Glastonbury and Radstock, which was commenced by Glastonbury; that the crossing-agent not having expected the up-special-train to reach Radstock quite so soon, such wrangling was the cause of his not receiving the necessary information from Radstock, and of his not appointing a crossing-place for the two trains which so unfortunately came into collision; and that a most serious responsibility rests upon him for thus neglecting his duty.

Admitting, however, that two messages attempted to be sent from Radstock to Glastonbury were improperly checked from Glastonbury, and that the crossing-agent had previously assumed the responsibility, which he did not fully carry out, of arranging the crossings of the up-special train, the station-master at Radstock cannot be justified in sending forward the up-special-train at a time when the down-Bath-special was so long over-due in the opposite direction. Even though the strict letter of the printed regulations did not precisely refer to such a train running without a time-table notice, yet if he had observed common precautions he would have taken more pains to ascertain from Glastonbury whether it was right to send forward the up-relief-train under such circumstances.

It is quite clear that the precautions adopted with regard to ordinary trains, and with regard to special trains arranged to run according to printed time-tables, were neglected as regards the up-special-train. The crossing-agent did not receive, nor did he ask for, any information in regard to it, from the time when it left Evercreech at 10 o'clock until after the collision occurred. Although he had undertaken to arrange its crossings, he did not send crossing-orders to the station-masters, and the station-masters could not therefore give them to the engine-drivers. The printed Regulations required that "Drivers of trains sent on to cross other trains at places "where they are not marked to cross in the working time-book must be furnished "with a crossing-order." But Bishop, the engine-driver of the up-special-train, who "had never worked so before," running with a train for which no time-table had been arranged, and every crossing of which was out of course, crossed six trains between Wimborne and Radstock with only one crossing-message. It is difficult, under these circumstances, to blame him for leaving Radstock, as he had left other stations, without a crossing-order.

There are admittedly too many instruments on the circuit for one wire, which would prevent that free communication with Glastonbury which is prescribed by the Regulations, and which is so necessary; but the station-master at Radstock, who had received and issued crossing-orders for the two preceding trains, No. 16 ordinary and No. 16 up-special, to cross the down-Bath-train at Wellow, was certainly culpable for venturing, merely because two messages had been improperly checked, and because Glastonbury had telegraphed, "I will arrange the crossings," to allow the up-relief-train to leave Radstock for Wellow without any further instructions from Glastonbury and without a crossing-order.

Summary.

In considering the circumstances of this collision, the following defects of regulations and of working come to light:—

1. The Foxcote cabin was employed under regulations which did not contemplate or provide for such a cabin being interposed between two crossing-stations, and in a manner to constitute a breach of the undertaking given under seal of the Company to the Board of Trade, to the effect that only one engine in steam, or two or more engines coupled together, should be allowed to be between Radstock and Wellow at the same time.

2. The signalman in that cabin was comparatively inexperienced, was quite unable to use the speaking-instruments supplied in the cabin, and was almost unprovided with oil, so that he could not light the lamp of his distant-signal towards Wellow.

3. The responsibility for the safe working of the single-line was, in a great measure, and too often solely intrusted, at Wellow, to a boy 15 years of age, paid 7*s.* 6*d.* a week, and working ordinarily 14 hours a day, employed to book the passengers, collect the tickets, and attend to the accounts; and this boy had been on the 7th August in sole charge of the instruments from 6.30 p.m. to 11.15 p.m., while the station-master was absent, and thus on duty upwards of 15¼ hours when the collision occurred.

4. The system of signalling on the block-instruments prescribed in the regulations had been habitually neglected between Radstock and Midsomer-Norton, and had not been regularly attended to at Wellow and certain other stations.

5. The train-advice-book employed by the crossing-agent for arranging the crossing-places of the trains, and relied upon by him for that purpose, did not contain columns for entries from Radstock, or from some other stations.

6. When orders were given for running the up-relief-train, no time-table was drawn up for it by the superintendent; instructions were not, in the absence of any time-bill for it, forwarded to the different station-masters as to when they might expect it; and, although the crossing-agent had informed the various stations of the time named for it to start from Wimborne, and had arranged for its crossings at Bailey-Gate and Templecombe, he allowed it without any special notice to cross No. 18 down-train at Shepton-Mallet, and he did not take sufficient precautions to inform himself of its running, and thus to ascertain when it was likely to reach Radstock.

7. The crossing-agent checked in an improper manner messages which it was attempted to forward to him from Radstock, one at 10.39 p.m., and, if John is to be believed, a second at or after 10.55 p.m., the latter of which would have informed him of the approach of the up-special-train from Midsomer-Norton towards Radstock, and of the immediate necessity of arranging a crossing between that train and the down-Bath-train.

8. The up-relief-train was allowed to cross six trains at different stations, but the engine-driver had received only one instruction and no regular crossing-order.

9. The station-master and telegraph-clerk at Wellow, according to the evidence, in my opinion, allowed the down-Bath-train to leave Wellow without any notice to Foxcote, and without its being taken on block from Foxcote.

10. They received the usual signals, and accepted the up-special train from Foxcote, some five or six minutes later, and before the down-Bath-train had time to reach Foxcote; whereas they knew that the latter ought, when once started from Wellow, to have had time to reach Radstock before the former left Radstock.

11. The station-master at Radstock allowed the up-relief-train to leave that station for Foxcote without any crossing-order or instructions from the crossing-agent, placing too much reliance on the previous assurance from the crossing-agent that he would arrange the crossings, and not sufficiently persisting in the attempt, in which his telegraph clerk had twice been improperly stopped, to communicate with the crossing-agent.

12. The engine-drivers of these two trains, not knowing how other trains were running, and not having been accustomed strictly to obey the regulations as to crossing-orders or telegraph-passes, did not ask for either before leaving Wellow in the one direction or Radstock in the other.

13. There are, on the Bath circuit, too many telegraph-speaking-instruments on one line to admit of the regulations being properly carried out as to the free telegraphing of trains.

The relative responsibilities to be attached to the various officers and servants of the Company implicated in this accident, may, on the evidence be, in my opinion, apportioned as follows:—

Relative Responsibilities.

The Wellow station-master, Sleep, who, on his return from Midford, resumed his charge of the Wellow station, is directly responsible, first for having allowed the down-Bath-train to start from Wellow without the exchange of the necessary signals on the block-instruments with the Foxcote cabin; and secondly for having permitted the up-relief-train to leave Foxcote before the down-Bath-train (which could not cross it before reaching Radstock) had time even to reach Foxcote.

The Wellow telegraph-clerk, Hillard, was Sleep's agent in this proceeding, which was as certain a method as could have been devised of causing the two trains to meet each other in collision on the single line. It is only in consideration of his tender age —15; of his long hours,—upwards of 15, on duty; of his having other duties to perform incompatible with proper attention to his telegraph-instruments; and of the fact that Sleep was, under the regulations, in responsible charge of such arrangements,—that he can be considered free from the most serious consequences.

The crossing-agent, Percy, who had specially intimated to the various station-masters that he would arrange the crossings of the up-relief-train, also directly contributed to the collision, by failing to arrange a crossing-place for these two trains, knowing, as he did, that the up-relief-train had left Evercreech at 10 o'clock, and the down-Bath-train had left the ticket-platform at Bath at 10.48; by neglecting to ascertain how the up-relief-train was running after it left Evercreech at 10 o'clock; and by refusing to receive information proffered on the speaking-telegraph-instrument from Radstock in regard to it.

The Radstock station-master, Jarrett, was not, under the circumstances, with the down-Bath-train overdue at his station, justified in allowing the up-relief-train to leave Radstock for Foxcote and Wellow without a crossing-order, or more distinct instructions from Glastonbury. But it must be remembered that he had been informed from Glastonbury that the crossings of the up-relief-train would be arranged by the crossing-agent; that his telegraph-clerk had attempted to communicate with Glastonbury, and had been stopped in that attempt; and that the up-relief-train was duly taken on block from Foxcote.

The Superintendent of the line, Mr. Difford, who ordered the running of the up-relief-train, is responsible for not having caused a proper time-table to be made and telegraphed to the various stations, for so exceptional a train running on so busy a day all the way from Wimborne to Bath; and for the general want of uniformity between the regulations and the practice, the laxity of discipline, and the inefficiency and long hours of servants, disclosed during the inquiry.

When, on the one hand, the strongest comments are in such a case necessarily and unavoidably made in regard to the conduct of inferior officers and servants, justice demands, on the other hand, that the responsibilities which rest with those above them should not be omitted from consideration. Some excuse may properly be allowed for negligence or mistakes committed by inferior officers or servants, when they work continually under defects of regulations or discipline, or with inefficient or overworked colleagues, or under other disadvantageous conditions. But a corresponding degree of responsibility is, under such circumstances, necessarily transferred to their superiors. The Wellow station-master, Sleep, may be held, on the evidence, to have principally and directly contributed to this accident. But it is, at the same time, right to remember and record the precise circumstances under which he has fallen into this position. He complained of long hours. He was therefore permitted to leave duty at 6.30 p.m. daily. His duties after that hour devolved, according to the regulations, jointly on the telegraph-clerk and the signalman; but practically, as regards the responsibility of the single-line working with the telegraph-instruments, on the telegraph-clerk. On returning to the Wellow station at 11.8 p.m. he resumed his charge of the station, and his responsibilities. It has been urged that on such a day he ought not to have left his station at all; but if he had remained at his work he would have been on duty from 5.30 a.m. until some time after the accident, say for upwards of 18 hours. If, on the other hand, a responsible agent had been appointed, habitually, or even for that day only, to share his hours of duty, and take charge of the station when he was absent at his meals or after his regular hours, then he would not have committed this fatal mistake. And the superintendent, Mr. Difford, and the inspector, Wood, who failed to make proper arrangements at this station for the better working of the line and for securing the safety of the public, must be held, so far, to share with Sleep the responsibility of the collision. As the directors of the Somerset and Dorset Railway Company had legally surrendered their position in regard to the working of their line; as the Midland and London-and-South-Western Railway Companies had so recently acquired joint possession of it; and as no change had taken place in the local management,—there is greater difficulty than there might otherwise have been in such a case in fixing the responsibility higher than the superintendent.

Single-line working.

The dangers peculiar to single-line working are precisely those connected with alterations in the crossing-places of trains. As long as trains are running in accordance with properly arranged time-tables there is no risk of their meeting one another in collision. When it becomes necessary, in consequence of unpunctuality, or of extra trains being started, to alter crossing-places, or to provide for fresh crossings, then the dangers commence against which it is the object of regulations efficiently to provide. On some lines of railway, these alterations are left to the station-masters, subject to block-telegraph-working, to arrange between them. On other lines crossing-agents are employed with the special duty of constantly watching the running of the trains, and with the double object of avoiding delay, and of contributing to safety. On other lines, again, the train-staff-system is employed, and no engine or train is permitted to start from a station unless the train-staff applying to the section on which it is

to travel is present at the station. It has long been observed that the block-telegraph system, so valuable on double lines of railway, to prevent following engines or trains from overtaking and coming into collision with one another, is not equally to be relied upon in single-line working to prevent collisions between meeting trains; and the experience obtained from time to time in this respect has led to the introduction and employment of the train-staff. So far as experience shows, up to the present time, the combination of block-telegraph and train-staff working appears to offer the highest degree of safety, having regard to the practice of this country, though it must be admitted that the train-staff is apt to cause trouble and occasion delay, more especially on long lengths of single line. Various improvements are further from time to time proposed and discussed, such as electrical interlocking, combined action of signal-levers and telegraph-instruments, and automatic arrangements; and some of these may hereafter be found to work satisfactorily. But, whatever the system of working, or the apparatus employed, safety must more or less depend upon strict adherence to simple rules, and on the employment of responsible agents, carefully selected and closely watched. Strict discipline with an inferior system will, as I have frequently had occasion to observe, generally afford better results than a superior system without good discipline. The risk of working must be materially increased when, as in the present instance, the regulations do not apply to the mode or the appliances of working; when the rules as regards the mode of telegraphing trains, or the use of crossing-orders or telegraph-passes, are not faithfully carried out; when there are too many telegraph-instruments on one wire; when signal-lamps cannot be lighted for want of oil; when special trains are run without printed notices, or even proper telegraphic advices; when wrangling takes place, and important messages are improperly checked from head-quarters on the telegraph-instruments; and when the duties supposed to be performed by responsible station-masters are allowed, in practice, to devolve upon telegraph-clerks of immature age or experience, employed for long hours, and taken away constantly to duties incompatible with their proper attention to the simple details prescribed with a view to safety. Railway traffic worked under such conditions cannot, whatever the system employed, expected to be carried on without serious accidents. It is by the avoidance of these defects in the first instance, rather than by seeking for any improvements in systems of working, that safety must be sought in the working of single lines of railway.

I have, &c.,
H. W. Tyler.

The Secretary,
(Railway Department,)
Board of Trade.

I concur in the above report.
W. W. Ravenhill.

APPENDIX.

APPENDIX A.

Copy of Undertaking given by the Somerset and Dorset Company, in regard to the mode of working the Bath Extension.

Somerset and Dorset Railway Company.

Glastonbury,
15th July 1874.

We, the Somerset and Dorset Railway Company, hereby undertake to work the "Extension to the Midland Railway at Bath," in such manner that only one engine in steam, or two or more engines coupled together, shall be upon the portions of the line under-mentioned, at one and the same time, viz.:

Evercreech junction and Evercreech Village.
Evercreech Village and Shepton Mallet.
Shepton Mallet and Binegar.
Binegar and Midsomer Norton.
Midsomer Norton and Radstock.
Radstock and Wellow.
Wellow and Bath.

The line will also be worked upon the absolute block system of telegraph.

I certify that this is the corporate seal of the Somerset and Dorset Railway Company.

(Signed) A. Difford,
Secretary.

15th July 1874.

Seal of the Company.

APPENDIX B.

Somerset and Dorset Railway.

Signal instructions, No. 17·5.

Opening of the Braysdown and Foxcote Colliery Sidings.

Instructions as to Signals, to come into operation on Wednesday, 26th May 1875, at 6.0 a.m.

These sidings are situate about one mile north of Radstock, with facing points for down trains.

They are protected by the usual semaphore auxiliary signals in each direction, and also by two home signals, (one on each side of the signal cabin,) all interlocked with the points. Each home signal has two arms—the upper for through trains, the lower for goods and mineral trains, stopping at the sidings.

All trains must approach these sidings with caution.

The signal cabin will be a telegraph block station intermediate between Radstock and Wellow, and will be open during train hours. It will also be supplied with a speaking instrument on the through Bath circuit (call T.)

Secretary's Office, Glastonbury,
24th May 1875.

A. Difford.

APPENDIX C.

Private.

SOMERSET AND DORSET RAILWAY,

Special Notice, No. 17/76.

Station Agents are required personally to distribute this notice to their staff, and every person supplied with a copy is held responsible to read it carefully through, to note the general information it contains, and act up to and obey the instructions particularly applicable to himself. No excuse of want of knowledge of these special arrangements can be admitted for any failure or neglect of duty.

SPECIAL TRAINS and EXCURSION ARRANGEMENTS for week ending 12th August 1876.

Picnic and Pleasure Parties.—*Bill No.* 23.

No. 1.—The return fares are a single fare and a quarter, plus fractions of a penny.

BATH REGATTA, 7th August 1876.

Excursions to Bath on Monday—*Bill No.* 47,
and
Market tickets to Bath every Saturday—*Bill No.* 25.

On Monday and Saturday Special Service in connection will run as follows:—

No. 2. DOWN.		A.M.	
Dep.	Wells	9 0	
„	Polsham	9 6	
Arr.	Glastonbury	9 15	cross No. 5 down ordinary.
Dep.	„	9 20	
„	West Pennard	9 35	
„	Pylle	9 45	
Arr.	Evercreech Junction	9 52*	

* Attach to No. 5 up ordinary.

No. 3. UP.		A.M.	
Dep.	Evercreech Junction	8 45	engine light. After No. 2 down arr.
„	Pylle	8 50	
„	West Pennard	8 58	
Arr.	Glastonbury	9 10	
Dep.	„	9 23	Wells engine light.
Pass	Polsham	9 30	
Arr.	Wells	9 35	

The 7.25 a.m. up ordinary train from Bournemouth must be strengthened on Bank Holiday, and *a large engine to be upon this train.*

Coaches to return by No. 17 down from Bath, and attach to No. 11 up train at Evercreech Junction for Wells.

On Monday, 7th August,

Bath Young Men's Liberal Association, Bath to Midford and back (about 500), Fare 6*d.* each.

DOWN.	4		UP.	5		
	P.M. ARR.	P.M. DEP.		P.M. ARR.	P.M. DEP.	
Bath { Mid. Station	—	2 0	Radstock	—	9 55	*Engine of No. 7 down special.*
Bath { T. Platform	2 5			*After No. 18 down arr., and ahead of No. 16 up ordinary.*		
Midford	2 15	2 20				
Wellow	2 30	2 36				
	Cross No. 9 up ordinary.					
			Wellow		10 3	
Radstock	2 45	—	Midford	10 8	10 15	
			Bath { T. Platform	10 24	10 30	
			Bath { Mid. Station	10 35	—	

Midford tickets to be issued at Bath to members of this party on production of a Picnic Card, of which the following is a copy:—

> Bath Young Men's Liberal Association.
>
> ANNUAL PICNIC.
>
> Midford, August 7th, 1876.
>
> This part of Ticket to be given up for Railway Ticket at Midland Station.

Mr. Maber, the Secretary to the Association, will on the following morning pay the total amount of such tickets issued.

Bath Regatta.—*Bill No.* 46.—Special Trains will run as follows:

UP.	6		DOWN.	7	
	P.M. ARR.	P.M. DEP.		P.M. ARR.	P.M. DEP.
Radstock	—	3 0 *Engine of No. 4 down special.*	Bath { Mid. Station	—	9 15
			Bath { T. Platform	—	—
Wellow	—	3 10	Midford	—	9 28
Midford	—	3 17	Wellow	—	9 35
Bath { T. Platform	3 26	3 30		Cross No. 18 up ordinary.	
Bath { Mid. Station	3 35	—			
			Radstock	9 45	—
				No. 16 up to be kept to cross.	

MONDAY—*continued.*

Excursions to Poole ndd Bournemouth every Monday and Thursday.
Reduced Fares.—*Bill No.* 29.

Special Service between Templecombe and Wincanton, in connection, will run as follows, on Mondays only:

Down.		No. 8	No. 9
		A.M.	P.M.
Dep.	Wincanton - -	7 45	11 9
Arr.	Templecombe - -	7 52*	11 15

* Attach to No. 1 down ordinary.

Up.		No. 10.	No. 11.
		A.M.	P.M.
Dep.	Templecombe -	7 30	10 57 after No. 18 down ordinary.
Arr.	Wincanton -	7 38	11 5

No. 19 up ordinary will have coaches attached, and stop where necessary to set down passengers. *The load to be arranged by Inspector Carter.*

SPECIAL EXCURSION—Bristol, Bath, &c., to Bournemouth and Weymouth, &c. *Bill No.* 41.

Down.	12.	Up.	13.
	A.M. ARR. | DEP.		P.M. ARR. | DEP.
Bristol (St. Phillips) - -	| 6 45	Bournemouth - -	| 7 10 after No. 12 dn. S.W. train.
Fishponds - - -	— | 6 53		
Mangotsfield - - -	— | 7 0 *Midland Engine.*		
Warmley - - -	— | 7 5		
Bitton - - -	— | 7 12		
Bath - - - -	7 20 | —	Parkstone - - -	7 | 15
		Poole Town - - -	— | 7 22 cross No. 13 down S.W. train.
Bath - - - -	| 7 30 after No. 1 up arr.		
		Poole Junction -	7 | 32
		Wimborne -	7 38 | 7 42 aftr. No. 12 dn. ody.
Midford - - -	7 | 43		
Wellow - - -	7 | 50 pass No. 4 down.		
		Weymouth	| 6 30
Radstock - - -	8 0 | 8 4 after No. 2 up ody.	Wimborne - -	7 40 | —
		Bailey Gate - -	7 | 54 *thro' dn. line.*
Midsomer Norton - -	8 | 10		
Chilcompton - -	8 | 16	Spetisbury - - -	8 | 0
Binegar - - -	8 | 23	Blandford - - -	8 | 6 *thro' dn. line.*
Masbury Summit - -	8 | 27		
Shepton Mallet - -	8 36 | 8 40	Shillingstone - - -	8 | 18
Evercreech - - -	8 | 49	Sturminster - - -	8 26 | 8 30 *cross No.* 16 *dn. ordy., and water.*
Evercreech Junction - -	8 | 55		
Cole - - - -	— | 9 5		
Wincanton - - -	9 | 15		
Horsington - -	9 21 | 9 23 *for water.*		
Templecombe Lower - -	9 | 24 *after No.* 5 *up and ahead of No.* 3 *dn ody.*	Stalbridge - - -	8 40 | 8 41 cross No. 17 dn. ordy.
		Henstridge - - -	8 | 46
		Templecombe Lower - -	8 51 | 8 57 *after No.* 17 *dn. ordy. arr.*
Hentsridge - - -	9 | 29		
Stalbridge - - -	9 | 33		
Sturminster - -	9 | 41		*examine tickets*
Shillingstone - - -	9 | 47	Wincanton - - -	9 | 5
Blandford - - -	9 | 58	Cole - - - -	— | 9 15
Spetisbury - - -	10 | 3	Evercreech Junction -	9 22 | 9 23
Bailey Gate - -	10 | 8	Evercreech, New - -	9 | 28
		Shepton Mallet - -	9 40 | 9 45 No. 18 dn. ordy. to be kept to cross.
Wimborne (for Weymouth)	10 20 | 11 18		
Weymouth - - -	12 33 | —		
Wimborne (for Bournemouth)	10 20 | 10 27	Masbury - - -	9 | 55
Poole Junction - -	— | 10 35 *cross No.* 5 *up S.W.*	Binegar - - -	10 | 0
		Chilcompton - -	10 | 7
		Midsomer Norton - -	10 | 14
		Radstock - - -	10 20 | 10 22
Poole Town - - -	— | 10 45	Wellow - - -	10 | 32
Parkstone - - -	10 | 52	Midford - - -	10 | 38
Bournemouth - - -	11 0 |	Bath { Ticket Plat. -	10 46 | 10 53
		Bath { Mid. Station -	11 0 | —
		Bath - - -	— | 11 5
		Bitton - - -	— | 11 13
		Warmley - - -	— | 11 20 *Midland Engine.*
		Mangotsfield - - -	— | 11 25
		Fishponds - - -	— | 11 32
		Bristol (St. Phillips) -	11 40 | —

Foresters' Fete at Sherborne.

No. 14.—1st, 2nd, and 3rd class return tickets, at single-journey fares, will be issued from all stations to Sherborne, by the 7 25 a.m. from Bournemouth, 7.15 a.m. from Bath, and 7.20 a.m. from Burnham, (which trains must be strengthened,) available to return by ordinary trains same day.

MONDAY—*continued.*

EXCURSION to BURNHAM.—Special Trains will run as follows. *Bill No.*

DOWN.	No. 15.	DOWN.	No. 16.
	A.M. ARR. | DEP.		P.M. ARR. | DEP.
Bath Midland Station -	| 9 0	Burnham - -	| 8 0
	aft. No. 2 up ody.	Highbridge - -	8 7 | 8 10
			aft. No. 9 up arr.
Bath Ticket Platform -	— | —		
Midford - - -	| 9 13		*examine tickets.*
Wellow - - -	| 9 20	Bason Bridge - -	— | 8 17
Radstock - - -	9 30 | 9 33	Edington - - -	— | 8 27
	aft. No. 4 up arr.	Shapwick - - -	— | 8 35
	pass No. 6 dn. ody.		
		Ashcott - - -	— | 8 42
Midsomer Norton - -	— | 9 41	Glastonbury - - -	8 50 | 9 0
Chilcompton - -	— | 9 50		
Binegar - - -	— | 9 59	West Pennard - -	9 15 | 9 17
Masbury - - -	— | 10 4		*cross No. 10 & 11*
Shepton Mallet - -	10 13 | 10 15		*up ordinary.*
	crs. No. 5 up ody.		
		Pylle - - -	— | 9 30
Evercreech, New - -	— | 10 25	Evercreech Junc. - -	9 35 |
Evercreech Junc. - -	10 30 | —		

UP.		UP.	
	A.M.		P.M.
Evercreech Junc. - -	| 10 35	Evercreech Junc. - -	| 9 40
Pylle - - -	— | 10 43		*not to start till*
West Pennard - -	— | 10 52		*No. 13 up spcl.*
	crs. No. 3 dn. ody.		*has signalled into*
			Shepton.
Glastonbury - -	11 5 | 11 10	Evercreech Village -	— | 9 47
	examine tickets.	Shepton Mallet - -	10 0 | 10 5
			No. 18 dn. ody. to
Ashcott - - -	— | 11 17		*be kept to cross.*
Shapwick - - -	— | 11 22		
Edington - - -	— | 11 30	Masbury - - -	— | 10 17
Bason Bridge - -	11 | 35	Binegar - - -	— | 10 24
Highbridge - -	11 | 40	Chilcompton - -	— | 10 33
Burnham - - -	11 45 | —	Midsomer Norton - -	— | 10 41
	crs. No. 4 dn. ody.	Radstock - -	10 48 | 10 50
		Wellow - - -	— | 11 3
		Midford - - -	— | 11 10
		Bath { Ticket P. - -	11 22 | 10 25
		{ Mid. Station -	11 30 |

HIGHBRIDGE MARKET.—A Special Cattle Train will run as follows :—

No. 17.	P.M. ARR. | DEP.	
Highbridge - -	— | 12 20	*follow No. 4 down and ahead of No. 5 down ody.*
Bason Bridge - -	— | —	
Edington - - -	— | —	
Shapwick - - -	12 | 38	
Ashcott - - -	— | —	
Glastonbury - -	12 52 | 1 20	*cross No. 5 up ordinary.*
West Pennard - -	1 35 | 1 40	
Pylle - - -	1 | 50	
Evercreech Junction -	1 58 | 2 5	*after No. 9 up Main Line.*
Cole - - -	2 | 20	
Wincanton - - -	2 32 | 2 40	*cross No. 10 up ordinary.*
Templecombe (Upper) -	2 50 | —	*cross No. 11 up ordinary.*

Engine of this special to return coupled to No. 12 up ordinary train for Highbridge.

MONDAY—*continued.*

SPECIAL EXCURSION—Burnham, &c., to Glastonbury and Wells.

No. 18. DOWN.

	P.M. ARR.	DEP.	
Burnham	—	12 40	*Engine and Carriages of No. 15 up special.*
Highbridge Station	12 47	12 50	
Bason Bridge	—	12 55	
Edington	—	1 5	
Shapwick	—	1 13	*cross No. 5 up ordinary.*
Ashcot	—	—	
Glastonbury	1 26	1 30	
Polsham	—	—	
Wells	1 45		

These tickets to be available to return from Wells per 6.30 p.m. up ordinary train, and from Glastonbury per 6.50 p.m. and 9.8 p.m. same day.

SPECIAL EXCURSION—Wells and Glastonbury to Burnham.

No. 19. UP.

	P.M. ARR.	DEP.	
Wells	—	2 15	*Engine and train of No. 18 down special.*
Polsham	—	2 20	
Glastonbury	2 30	2 35	
Ashcot	2	41	
Shapwick	—	2 46	
Edington	2	51	
Bason Bridge	2	59	
Highbridge Station	3 3	3 5	
Burnham	3 12	—	

These tickets to be available to return per 8.10 p.m. ordinary train from Burnham same day.

* * * *

(Signed) A. DIFFORD,
Superintendent.

Office of Superintendent of Line, Glastonbury, 3rd August 1876.

APPENDIX D.

REGULATIONS for working TRAINS by the ABSOLUTE BLOCK TELEGRAPH SYSTEM.

Signalling Trains and obtaining Line Clear.

The "block" or signal instruments are to be devoted exclusively to signalling of trains, and the authority to work them is entrusted solely to the station agent, without whose authority no signal whatever is to be passed.

In order to make these Regulations more clearly intelligible, the station from which a train is to start is designated "Station A," the station to which a train is about to proceed "Station B."

1. (*a.*) Immediately previous to starting a train at Station A. the needle must be moved steadily to and fro, so as to call the attention of Station B. to which the train is to proceed.

(*b.*) Station B. will repeat the signal to show that his attention has been obtained.

(*c.*) Station A. will then give three steady beats of his needle to the right, signifying, "Is line clear?"

(*d.*) If line is clear, Station B. will reply, "Yes, clear," by repeating the same number of beats (three) also to the right.

(*e.*) Station A. will, on receiving the above reply, signal to Station B. "Train will start," by giving three steady distinct beats of his needle to the left, upon which Station B. will place and block the needle opposite to the words on the dial, "Train on line."

(In the case of a train which is timed to pass Station A. without stopping, care must be taken that "Line clear" is not asked too soon; in order to prevent the line from being "blocked" too many stations in advance, by which practice frequent delays take place to other trains in crossing).

(*f.*) Station A. will start train as soon as he perceives that Station B. has blocked the needle in answer to the message, "Train will start."

(*g.*) Immediately on the arrival of the train at Station B. the peg is to be removed, and Station A. is to be advised of it by giving four steady beats of the needle to the right, which Station A. will acknowledge to Station B. in the same manner; but the peg must not be removed until Station B. has ascertained from the guard that the whole of his train has arrived, and has also seen the White Target signal by day, or the corresponding red tail signal lamp by night, on the incoming train.

2. If, when the signal is given from Station A. "Is line clear?" the line should not be clear, the reply "No, blocked," is to be immediately returned by Station B., by giving six distinct beats to the left, which signal (six beats) Station B. will repeat.

3. On receiving the reply at Station A. "No, blocked," it will be the duty of the person in charge of the instrument at Station A. to watch it, until the "clear" signal of four beats to the right has been given and repeated twice, and then the question, "Is line clear?" must be repeated from A. to B., and under no circumstances whatever is the train to be started until the reply is received at A. "Yes, line clear?" and Station B. has in reply to signal "Train will start," blocked his needle over to "Train on line."

4. After the signals "Train will start," have been given from A. to B., and Station B. has pegged the needle to the left "Train on line," the instrument is to be carefully watched until the needle is restored to its normal position.

5. Should anything occur at a station by which the "line is blocked," so as to prevent or render dangerous the passing of a coming train, the stations on both sides are to be immediately advised thereof by first calling attention, and then giving six distinct beats of the needle to the left, which is to be repeated by the station receiving it as soon as the obstruction is removed the "clear" signal of four beats is to be given and repeated twice.

6. The times at which "Line clear" is received, "Time of departure of train," and time of receipt of signal "Train has arrived" are to be carefully entered in "Line clear book," at the stations, and the signature of clerk placed opposite to the entries. The book always to be left open in a convenient position near the instrument.

7. The station agent at Station B. must at all times, before he replies, "Yes, line clear," satisfy himself it is free, not only from the ordinary trains, but also from any

special trains, ballast trains, trucks, or other obstructions; he must also be sure that no train has been divided and only part of it brought into his station, as may sometimes happen with heavy goods trains (see memorandum on Rules 1 and 7), and that the points are in their proper position.

8. Should the block telegraph be out of order, recourse must be had to the single needle telegraph, and the following rules strictly observed:—

When a train is ready to leave Station A. the question is to be asked of Station B., "Is line clear?" Station B. will reply (as the case may be) with "Yes, line clear," or "No, blocked," and the question and answer must be entered in the line clear book at both stations. If the answer has been received at Station A. that the line is blocked, the train must not be started from that station until another message is received from Station B. that "Line is clear." Station A. must then send message to Station B. "Train will start," and Station B. must reply to Station A. as soon as it is ascertained that the whole of the train has arrived, "Train arrived."

9. Every message affecting the working of the line, such as crossing of trains, &c., obstruction signals, is to be copied into the "Line clear message book," before it is despatched, and the receiving station must repeat it to the forwarding station as a proof of its receipt and correct transmission, and the time of such repetition is to be entered at the foot of both the forwarded and received form in the space provided for that purpose. Such messages and repeats are to bear the special prefix "S R" (repeated message), which will entitle them to take precedence of all others except "D. G's." Station agents are in all cases to see these messages transmitted, and must examine the repetition with original to prove its correct transmission.

Working Trains when both Telegraphs are out of order.

10. Should both telegraphs be out of order, no train shall be permitted to pass the crossing places fixed by the working time book until the train it is appointed to meet shall arrive at such crossing place, or unless and until a message in writing, signed by the station agent, shall have been forwarded by special messenger from Station A. to Station B. to ascertain that the line is clear, and a written answer has been received by Station A. from Station B. that the line is clear, that it will be kept clear, and that the train may proceed.

11. Should both telegraphs be out of order, the drivers of trains be instructed to proceed with great caution.

Regulations for altering the Crossing Places of Trains shown in the Working Time Book.

12. The crossing places as shown in the working time books must never be changed, except by the direction of the Superintendent at Glastonbury, and then only in case of ascertained delay to the trains, or of accident or breakdown; and not until the telegram sent by the Superintendent at Glastonbury, altering the crossing arrangements has been correctly repeated from the stations with which the arrangements are made, and in no case is a train to be sent forward until the whole instructions in Rule No. 1 have been fully complied with.

13. When a train is ordered to proceed beyond the ordinary crossing place a red flag by day, and a red lamp by night, will be fastened to the buffer plank of the engine by the driver. All signalmen, pointsmen, and others will in such cases allow the train to proceed, this signal indicating that they have had special instructions to do so.

14. Drivers of trains sent on to cross other trains at places where they are not marked to cross in the working time book must be furnished with a crossing order, directing them to do so, and stating where the traius are to cross; this order must be signed by the station agent issuing the same. Then after the special instructions contained in the crossing order have been obeyed, the trains are to meet and pass each other at the regular crossing places marked in the working time book.

Special Notice.

The red or danger signal is to be shown at all block telegraph stations, until the line is telegraphed clear, and any engine or train arriving within this period is to be stopped, and the driver and guard told by the station agent that the line is blocked, according to the indication of the needle.

The guards before starting from a block telegraph station must ascertain from the station agent that the line is clear to the next station, and immediately on arriving at a station they must inform the agent whether their whole train has arrived or not. In the case of trains that pass stations without stopping the guards must give the all-right white flag signal by day and show a white light by night.

Memorandum on Rules I. & VII.

On the arrival of either a goods, ballast, or passenger train at a station, the guard will report to the station agent that the whole of his train has arrived, always stating No. of train, and whether "up" or "down," and the agent must not signal its arrival to the last station it had left until he has received this report from the guard, and also seen the white target signal by day or the red tail lamp signal by night on the incoming train.

(*a.*) During the night, or in the absence of the station agent, the station signalman or pointsman will act jointly with the telegraph clerk in the place of the station agent.

(*b.*) When trains pass a station at which they are not timed to stop, the guard must look out and signal that all is right, by holding out a white flag by day, and by holding out a white light by night.

(*c.*) Upon no consideration, and under penalty of instant dismissal, must a telegraph clerk signal "Line clear" until he has been so instructed by the station agent or his deputy to do so.

All special engines, or special trains, with passengers, goods, mineral or ballast engines, or trains not inserted in the regular working time book for the current month, must be furnished, before leaving any block station, with a telegraph pass, carefully filled up with the number and time of the train, signed by the station agent issuing the same, showing that the line is clear to the next block station in advance.

In no case must a ballast engine, on leaving a block station, return to that station without having been to the block station in advance, and having received a line clear ticket to enable it to return.

The station agent must each morning carefully examine the line clear book entries of the previous day, and attach his signature at the foot thereof, in proof of such examination. Should he discover any omission, careless or incorrect entry, a full report of the same must at once be sent to the Secretary. Duplicate copies of the "line clear book" will be supplied to each station, one copy to be sent on the first of each month to the Secretary's office for examination, while the other copy is in use.

Section IV.

Station Agents.

Every officer in charge of a station is responsible for the faithful and efficient discharge of the duties devolving upon all the Company's servants at the station.

He shall be answerable for the state of the office and buildings, and the Company's property there; he shall daily inspect all rooms and places in connection with the station, particularly the urinals and closets, in order to see that they are neat and clean; and he shall cause the station to be kept clear of weeds, and the ballast raked and preserved in neat order. He shall also preserve the toll and notice boards, and the byelaws for regulating the traffic of the railway, and shall see to their proper exhibition at the station. He will make public such notices as are issued to the public by the Company, but exhibit no other notices without special permission.

Rules of Electric Telegraph Department.

Train Advices (T.A.).

30. Station agents are instructed to advise Glastonbury by telegram (T.A. prefix) of the position of *all* trains timed to cross at their respective stations; for example, Nos. 10 up and 10 down-trains are timed to cross at Pylle: *immediately* line clear is asked to Pylle for the first of these two trains (whichever it may happen to be) it will be the duty of the agent there to advise Glastonbury, and to add "Pennard (or, as the case may be,) Evercreech has not yet asked line clear for No. —," the other of the two trains. A record of these advices will be kept at Glastonbury, in a register for the purpose.

Departures of all down-trains must also be signalled from Bath (Mid-station) to Glastonbury, from Shepton to Evercreech Old and to Glastonbury, from Highbridge to Glastonbury, from Cole to Templecombe (No. 2 box), and from Blandford to Wimborne. Departure of all up-trains must be signalled from Wimborne to Blandford and Glastonbury, from Stalbridge to No. 2 box Templecombe, from No. 2 box Templecombe to Evercreech Old and Glastonbury, from Evercreech Old to Glastonbury, and from Radstock and ticket platform to Bath.

General information as to the position of *all* trains must also be *freely* telegraphed to Glastonbury by all stations in order to prevent delays in crossing.

APPENDIX E.

Change of Crossing Place.—Forms employed.

Somerset and Dorset Railway.

Telegraphic Despatch.

Order to keep Train.

Glastonbury Station.

Prefix, S. R. Code Time, K.C. No. of Words, 20. Delivered to Clerk, 10.15 p.m. Date, August 7th, 1876. Received 10.15 p.m. } Sent to W. Station by me J.L., Sent, 10.19 p.m. } clerk.

From Percy, Glastonbury Station, to Sleep, Wellow Station.

Keep No. seven down special train at Wellow to cross No. sixteen up ordinary train. Repeat.

Repeated at 10.20 p.m.

(Signature) C. E. Percy.

Somerset and Dorset Railway.

Telegraphic Despatch.

Order to send on Train.

Glastonbury Station.

Prefix, S. R. Code time, K.C. No. of Words, 21. Delivered to Clerk, 10.15 p.m. Date August 7th, 1876. Received, 10.15 p.m. } Sent to D.K. Station, by me, J.L., Sent, 10.22 p.m. } clerk.

From Percy, Glastonbury Station, to Jarrett, Radstock Station.

Send on No. sixteen up ordinary train to cross No. seven down special train at Wellow. Repeat.

Repeated at 10.23 p.m.

(Signature) C. E. Percy.

Somerset and Dorset Railway.

Telegraphic Despatch.

Order to keep Train.

Glastonbury Station.

Prefix, S. R. Code Time, K. F. No. of Words, 20. Delivered to Clerk, 10.30 p.m. Date, August 7th, 1876. Received, 10.30 p.m. } Sent to W. Station, by me, J.L., Sent, 10.35 p.m. } clerk.

From Percy, Glastonbury Station, to Sleep, Wellow Station.

Keep No. seven down special train at Wellow to cross No. sixteen up special train. Repeat.

Repeated at 10.36 p.m.

(Signature) C. E. Percy.

Somerset and Dorset Railway.

Telegraphic Despatch.

Order to send on Train.

Glastonbury Station.

Prefix, S. R. Code Time, K. F. No. of Words, 21. Delivered to Clerk, 10.30 p.m. Date, August 7th, 1876, Received, 10.30 p.m. } Sent to D.K. Station by me, J.L., Sent, 10.38 p.m. } clerk.

From Percy, Glastonbury Station, to Jarrett, Radstock station.

Send on No. sixteen up special train to cross No. seven down special train at Wellow. Repeat.

Repeated at 10.39 p.m.

(Signature) C. E. Percy.

Somerset and Dorset Railway.

Telegraphic Despatch.

Order to keep Train.

Glastonbury Station.

Prefix, S. R. Code Time, K. L. No. of Words, 18. Delivered to Clerk, 10.55 p.m. Date, August 7th, 1876. Received, 10.55 p.m. } Sent to W.G. Station by me, J.L., Sent, 10.57 p.m. } clerk.

From Percy, Glastonbury Station, to Haifman, Wincanton Station.

Keep No. eighteen down train at Wincanton to cross No. nineteen up train. Repeat.

Repeated at 10.58 p.m.

(Signature) C. E. Percy.

Somerset and Dorset Railway.

Telegraphic Despatch.

Order to send on Train.

Glastonbury Station.

Prefix, S. R. Code Time, K. L. No. of Words, 19. Delivered to Clerk, 10.55 p.m. Date, August 7th, 1876. Received, 10.55 p.m. } Sent to T.O. Station by me, J.L., Sent, 10.59 p.m. } clerk.

From Percy, Glastonbury Station, to Thomas, Templecombe Station.

Send on No. nineteen up train to cross No. eighteen down train at Wincanton. Repeat.

Repeated at 11.0 p.m.

(Signature) C. E. Percy.

Somerset and Dorset Railway.

Prefix, S. R. Code Time, K. F. No. of Words, 20.

Station from which the Message is received.	Receipt. Fin.	Receiving Clerk's Signature.	Station to which the Message is transmitted.	Time transmitted. Fin.	Transmitting Clerk's Signature, or Messenger's Name.
	h. m.			h. m.	
G. Y.	10.40	A. H.		„	
	—m			—m	

Wellow Station, August 7th, 1876.

From Percy, Glastonbury Station, to Sleep, Wellow Station.

Keep No. seven down special train at Wellow to cross No. sixteen up special train. Repeat.

Received at 10.40 p.m.

(Signature) James Sleep.

Receivers of Telegrams are requested to carefully fill in the spaces for time of delivery and signature.

Somerset and Dorset Railway.

Prefix, S. R. Code Time, K. F. No. of Words, 21.

Station from which the Message is received.	Receipt. Fin.	Receiving Clerk's Signature.	Station to which the Message is transmitted.	Time transmitted. Fin.	Transmitting Clerk's Signature, or Messenger's Name.
	h. m.			h. m.	
G. Y.	10.37	W. H. J.		„	
	—m			—m	

Radstock Station, August 7th, 1876.

From Percy, Glastonbury Station, to Jarrett, Radstock Station.

Send on No. sixteen up special train to cross No. seven down special train at Wellow. Repeat.

Received at

(Signature) J. V. Jarrett.

Receivers of Telegrams are requested to carefully fill in the spaces for time of delivery and signature.

APPENDIX F.

Cost of the Damage done to Rolling Stock by the Collision near Radstock.

Estimated cost of repairs to engines and coaches injured in the collision at Braysdown :—

	£	s.
No. 5 engine - - -	197	0
No. 7 „ - - - -	58	0
Five S. & D. coaches and one break-van	189	0
Extent of injury to 11 Midland vehicles	1,416	15

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